

Disodium Phosphate Anhydrous Powder**Section 1 - Product and Company Identification**

Material Name	▪ Disodium Phosphate Anhydrous Powder
CAS Number	▪ 7558-79-4
EINECS	▪ 231-448-7
Molecular Formula	▪ Na ₂ HPO ₄
Molecular Weight	▪ 141.96
Product Description	▪ White powder solid with no odor.
Synonyms	▪ Dibasic Sodium Phosphate; Disodium Orthophosphate, Secondary; DSP
Manufacturer	▪ Innophos PO Box 8000 259 Prospect Plains Road Cranbury, NJ 08512-8000 United States
Telephone	
Technical	▪ 609-495-2495
<u>Emergency</u>	▪ 800-424-9300 - Chemtrec
<u>Emergency</u>	▪ 615-386-7816 - Innophos Emergency Communication Team (ECT)
<u>Emergency</u>	▪ 703-527-3887 - Chemtrec - International Collect Calls
Preparation Date	▪ 08/13/2004
Last Revision Date	▪ 09/15/2010

Section 2 - Hazards Identification**Emergency Overview****WARNING**

May cause respiratory irritation. Causes skin irritation. Causes serious eye irritation.

Prevention	Keep container tightly closed. Avoid breathing dust, fume, gas, mist, vapours and/or spray. Wash thoroughly after handling. Use only outdoors or in a well-ventilated area. Wear protective gloves, clothing, and eye/face protection.
Response	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell. IF ON SKIN: Wash with plenty of soap and water. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash before reuse. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
Storage/Disposal	Store in a well-ventilated place. Keep container tightly closed. Store locked up. Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Hazardous Components						
Chemical Name	CAS	%(weight)	UN;EINECS	LD50/LC50	EU Classification & R Phrases	Other
Sodium salt phosphoric acid (1:2)	7558-79-4	100%	231-448-7	Ingestion/Oral-Rat LD50: =17000 mg/kg	NDA	NDA

Under United States Regulations (29 CFR 1900.1200 - Hazard Communication Standard), this product is considered hazardous. In Canada, the product mentioned above is considered hazardous under the Workplace Hazardous Materials Information System (WHMIS). This product is considered dangerous according to the European Directive 67/548/EEC. According to Regulation (EC) No. 1272/2008 (CLP) this material is considered hazardous. According to the Globally Harmonized Standard for Classification and Labeling (GHS) this product is considered hazardous.

See Section 11 for Toxicological Information.

Section 4 - First Aid Measures

Inhalation

- Move victim to fresh air. If signs/symptoms continue, get medical attention.

Skin

- IF ON SKIN: Wash with plenty of soap and water. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash before reuse.

Eye

- Flush eyes with water for at least 15 minutes while holding eyelids open. Remove contact lenses if worn. If eye irritation persists: Get medical advice/attention.

Ingestion

- If swallowed, do NOT induce vomiting unless directed to do so by medical personnel. If victim is conscious and alert, give 2-3 glasses of water to drink. Seek immediate medical attention. Do not leave victim unattended. To prevent aspiration of swallowed product, lay victim on side with head lower than waist. Vomiting may occur spontaneously. If vomiting occurs and the victim is conscious, give water to further dilute the chemical.

Notes to Physician

- All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred. Ingestion of large quantities of phosphate salts (over 1.0 grams for an adult) may cause an osmotic catharsis resulting in diarrhea and probable abdominal cramps. Larger doses such as 4-8 grams will almost certainly cause these effects in everyone. In healthy individuals most of the ingested salt will be excreted in the feces with the diarrhea and, thus, not cause any systemic toxicity. Doses greater than 10 grams hypothetically may cause systemic toxicity. Treatment should take into consideration both anionic and cation portion of the molecule.

Other Information

- Call 911 or emergency medical service. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

See Section 2 for Potential Health Effects.

Section 5 - Fire Fighting Measures

Extinguishing Media

- Not combustible. Use extinguishing media suitable for surrounding fire.

Unsuitable Extinguishing Media

- None known.

Firefighting Procedures

- Dike area to prevent runoff and contamination of water sources. Dispose of fire control water later.

Unusual Fire and Explosion Hazards

- Non-combustible.

Hazardous Combustion Products

- Oxides of sodium, oxides of phosphorus.

Protection of Firefighters

- Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters' protective clothing will only provide limited protection.

Section 6 - Accidental Release Measures



**OSHA
WHMIS**

- Irritant
- Class D - Poisonous and Infectious Materials - Division 2 - Subdivision B



EU

- Irritant - Xi
R36/37/38

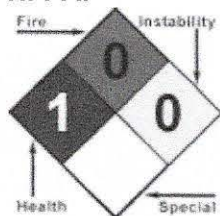


GHS

- Specific Target Organ Toxicity Single Exposure - Category 3, Skin Corrosion/Irritation - Category 2, Serious Eye Damage, Eye Irritation - Category 2A
- Inhalation, Skin, Eye, Ingestion/Oral
- Disorders of the lungs, Skin/Dermal,

**Route Of Entry
Medical Conditions
Aggravated by Exposure**

NFPA:



Potential Health Effects

Inhalation

Acute (Immediate)
Chronic (Delayed)

- May cause irritation.
- No data available.

Skin

Acute (Immediate)
Chronic (Delayed)

- May cause irritation.
- No data available.

Eye

Acute (Immediate)
Chronic (Delayed)

- May cause irritation.
- No data available.

Ingestion

Acute (Immediate)
Chronic (Delayed)

- Ingestion of large quantities may cause irritation, nausea, vomiting, diarrhea and abdominal cramps.
- No data available.

Carcinogenic Effects

- This product does not contain any ingredient designated by IARC, NTP, ACGIH or OSHA as probable or suspected human carcinogens.

See Section 12 for Ecological Information.

Section 3 - Composition/Information on Ingredients


- | | |
|--------------------------------------|---|
| Personal Precautions | ▪ Do not touch or walk through spilled material. |
| Emergency Procedures | ▪ Keep unauthorized personnel away. |
| Environmental Precautions | ▪ Spills may be reportable to the National Response Center (800-424-8802) and to state and/or local agencies. |
| Containment/Clean-up Measures | ▪ Sweep or vacuum up and place in an appropriate closed container.
Clean up residual material by washing area with water and detergent. Collect washings for disposal. |
| Prohibited Materials | ▪ None known. |

Section 7 - Handling and Storage

- | | |
|---|--|
| Handling | ▪ Avoid direct or prolonged contact with skin and eyes. Avoid breathing dust. Keep containers closed when not in use. |
| Storage | ▪ Product is hygroscopic and tends to cake on storage. Store in an area that is cool, dry and isolated from all toxic and harmful substances. Store in a well-ventilated place. Keep container tightly closed. |
| Special Packaging Materials | ▪ None known. |
| Incompatible Materials or Ignition Sources | ▪ No data available |

Section 8 - Exposure Controls/Personal Protection

Personal Protective Equipment

- | | |
|--|---|
| Pictograms | ▪  |
| Respiratory | ▪ For limited exposure use an N95 dust mask. For prolonged exposure use an air-purifying respirator with high efficiency particulate air (HEPA) filters. Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or symptoms are experienced. |
| Eye/Face | ▪ Wear safety glasses. |
| Hands | ▪ Wear appropriate gloves. |
| General Industrial Hygiene Considerations | ▪ Do not use, and/or consume foods, beverages, tobacco products, or cosmetics in areas where this material is stored. Wash hands and face carefully before eating, drinking, using tobacco, applying cosmetics, or using the toilet. |
| Engineering Measures/Controls | ▪ Adequate ventilation systems as needed to control concentrations of airborne contaminants below applicable threshold limit values. |

Exposure Limits/Guidelines						
	Result	ACGIH	Argentina	Canada Ontario	Canada Quebec	China
Disodium Phosphate Anhydrous Powder	STELs	Not established	Not established	Not established	Not established	16 mg/m3 STEL (free SiO ₂ <10%, except asbestos and toxic substances. Use PC-STEL of silica When free SiO ₂ >10%, total) <i>as Particulates not otherwise classified (PNOC)</i>
	TWAs	10 mg/m3 TWA (inhalable particles, recommended); 3 mg/m3 TWA (respirable particles, recommended) <i>as Particulates not otherwise classified (PNOC)</i>	10 mg/m3 TWA (inhalable fraction, particulate matter containing no asbestos and less than 1% crystalline silica); 3 mg/m3 TWA (respirable fraction, particulate matter containing no asbestos and less than 1% crystalline silica) <i>as Particulates not otherwise classified (PNOC)</i>	10 mg/m3 TWAEV (inhalable particulate); 3 mg/m3 TWAEV (respirable particulate) <i>as Particulates not otherwise classified (PNOC)</i>	10 mg/m3 TWAEV (total dust, containing no asbestos and less than 1% crystalline silica) <i>as Particulates not otherwise classified (PNOC)</i>	8 mg/m3 TWA (free SiO ₂ <10%, except asbestos and toxic substances. Use PC-TWA of silica When free SiO ₂ >10%, total) <i>as Particulates not otherwise classified (PNOC)</i>

Exposure Limits/Guidelines (Con't.)					
	Result	Malaysia	New Zealand	OSHA	Singapore
Disodium Phosphate Anhydrous Powder	TWAs	10 mg/m3 TWA (particulate matter containing no asbestos and <1% crystalline silica, inhalable fraction); 3 mg/m3 TWA (particulate matter containing no asbestos and <1% crystalline silica, respirable fraction) <i>as Particulates not otherwise classified (PNOC)</i>	10 mg/m3 TWA (inspirable dust); 3 mg/m3 TWA (respirable dust) <i>as Particulates not otherwise classified (PNOC)</i>	15 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable fraction) <i>as Particulates not otherwise classified (PNOC)</i>	10 mg/m3 PEL <i>as Particulates not otherwise classified (PNOC)</i>

Key to abbreviations

MSHA = Mine Safety and Health Administration

NIOSH = National Institute of Occupational Safety and Health

PEL = Permissible Exposure Level determined by the Occupational Safety and Health Administration (OSHA)

STEL = Short Term Exposure Limits are based on 15-minute exposures

TWA = Time-Weighted Averages are based on 8h/day, 40h/week exposures

TWAEV = Time-Weighted Average Exposure Value

ACGIH = American Conference of Governmental Industrial Hygiene

OSHA = Occupational Safety and Health Administration

Section 9 - Physical and Chemical Properties

Bioaccumulation Potential ■ No data found for product.
Mobility in Soil ■ No data found for product.

Section 13 - Disposal Considerations

Product ■ Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Section 14 - Transportation Information

DOT - United States - Department of Transportation

Shipping Name: Environmentally Hazardous Substance, Solid, N.O.S.

ID Number: 3077

Hazard Class: 9

Labeling Class: 9

Packing Group: III

This product is regulated for transportation because it contains a reportable quantity of a hazardous substance found in Appendix A to 49 CFR 172.101. Depending on the amount of the hazardous substance present, certain package sizes may be exempt from the transport regulations and can be shipped as non-regulated materials. Please check the ingredient listing to determine if the quantity of hazardous substance present in this product would be regulated in the package size being shipped.

Section 15 - Regulatory Information

RA Hazard Classifications ■ Acute
Risk & Safety Phrases ■ R36/37/38 Irritating to eyes, respiratory system and skin.
 ■ S24/25 Avoid contact with skin and eyes.
 ■ S22 Do not breathe dust.

Inventory						
Component	CAS	Australia AICS	Canada DSL	Canada NDSL	China	EU EINECS
Sodium salt phosphoric acid (1:2)	7558-79-4	Yes	Yes	No	Yes	Yes
Inventory (Con't.)						
Component	CAS	EU ELNICS	Japan ENCS	Korea KECL	New Zealand	Philippines PICCS
Sodium salt phosphoric acid (1:2)	7558-79-4	No	Yes	Yes	Yes	Yes
Inventory (Con't.)						
Component	CAS	Switzerland SWISS		TSCA		
Sodium salt phosphoric acid (1:2)	7558-79-4	No		Yes		

Physical Form

- Solid

Appearance/Description

- White powder solid with no odor.

Color : White		Odor : Odorless	
Taste : NDA		Odor Threshold : NDA	
Boiling Point:	NDA	Vapor Pressure:	NDA
Melting Point:	NDA	Vapor Density:	NDA
Specific Gravity:	NDA	Evaporation Rate:	NDA
Density:	NDA	VOC (Wt.):	NDA
Bulk Density:	NDA	VOC (Vol.):	NDA
pH:	9.1 (@ 1 wt/wt%)	Volatiles (Wt.):	NDA
Water Solubility:	Soluble 11 %	Volatiles (Vol.):	NDA
Solvent Solubility:	NDA	Flash Point:	NDA
Viscosity:	NDA	Flash Point Test Type:	NDA
Half-Life:	NDA	UEL:	NDA
Octanol/Water Partition coefficient:	NDA	LEL:	NDA
Coefficient of water/oil distribution:	NDA	Autoignition:	NDA
Bioaccumulation Factor:	NDA	Bioconcentration Factor:	NDA
Biochemical Oxygen Demand BOD/BOD5:	NDA	Chemical Oxygen Demand:	NDA
Persistence:	NDA	Degradation:	NDA

Section 10 - Stability and Reactivity**Stability**

- Stable under normal temperatures and pressures.

Hazardous Polymerization

- Hazardous polymerization will not occur.

Conditions to Avoid

- Dusting conditions, extreme heat, extreme humidity.

Incompatible Materials

- Strong acids, alkaloids, pyrogallol, lead acetate, resorcinol

Hazardous Decomposition Products

- Oxides of sodium. Oxides of phosphorus.

Section 11 - Toxicological Information**Other Material Information**

- May cause irritation to skin, eye and respiratory tract.

Disodium Phosphate Anhydrous Powder				7558-79-4					
Test Type	Dosage	Units	Route	Species	Duration	Results	Test Class	Target Organs	Comments
Acute Toxicity	17000	mg/kg	Ingestion/Oral	Rat	NDA	LD50	NDA	NDA	NDA
Irritation	500	mg	Eye	Rabbit	24 Hour(s)	NDA	Mild irritation	NDA	NDA
Irritation	500	mg	Skin	Rabbit	24 Hour(s)	NDA	Mild irritation	NDA	NDA

Key to abbreviations

LD = Lethal Dose

Section 12 - Ecological Information**Ecological Fate**

- No data found for product.

Persistence/Degradability

- No specific biodegradation test data located. While the alkalinity of this material is readily reduced in natural waters, the resulting phosphate may persist indefinitely or incorporate into biological systems.

Australia

Environment

Australia - National Pollutant Inventory (NPI) Substance List

None Listed

Australia - Priority Existing Chemical Program

None Listed

Other

The Australia Group - Export Control List - Chemical Weapons Precursors

None Listed

Canada

Labor

Canada - List of Prohibited and Restricted Cosmetic Ingredients (The Cosmetic Ingredient Hotlist)

None Listed

Canada - WHMIS - Classifications of Substances

None Listed

Canada - WHMIS - Ingredient Disclosure List

None Listed

Environment

Canada - CEPA - Priority Substances List

None Listed

China

Other

China - Annex I & II - Controlled Chemicals Lists

None Listed

China - Dangerous Goods List

None Listed

Croatia

Environment

Croatia - Air Quality - Emission Limits for Stationary Sources

None Listed

Croatia - Air Quality - Limit Values for Gaseous Pollutants

None Listed

Croatia - Air Quality - Recommended Values for Gaseous Pollutants

None Listed

Croatia - Ozone Depleting Substances - Annex A, Group I

None Listed

Egypt

Environment

Egypt - Air Pollutants - Emissions Limits - Overall Particles

None Listed

Egypt - Air Pollutants - Maximum Limits

None Listed

Europe

Environment

EU - Substances Depleting the Ozone layer (1005/2009) - Annex I Substances

None Listed

EU - Seveso II Directive (96/82/EC) - Qualifying Quantities for Major Accident Notification

None Listed

EU - Seveso II Directive (96/82/EC) - Qualifying Quantities for Safety Report Requirements

None Listed

Other

EU - CLP (1272/2008) - Annex VI - Table 3.2 - Classification

None Listed

EU - CLP (1272/2008) - Annex VI - Table 3.2 - Concentration Limits

None Listed

EU - CLP (1272/2008) - Annex VI - Table 3.2 - Labelling

None Listed

EU - CLP (1272/2008) - Annex VI - Table 3.2 - Notes - Substances and Preparations

None Listed

EU - CLP (1272/2008) - Annex VI - Table 3.2 - Safety Phrases

None Listed

EU - Hazardous Substances Restricted or Prohibited in Electrical Equipment (2002/95/EC) (RoHS)

None Listed

India

Environment

India - Hazardous Chemical Rules - List of Hazardous and Toxic Chemicals

None Listed

India - Ozone Depleting Substances - Schedule I

None Listed

Indonesia

Environment

Indonesia - Hazardous Waste from Non-Specific Sources

None Listed

Indonesia - Hazardous Waste from Specific Sources

None Listed

Japan

Labor

Japan - ISHL Dangerous Substances

None Listed

Japan - ISHL Designated Carcinogens

None Listed

Japan - ISHL Harmful Substances Prohibited for Manufacture

None Listed

Environment

Japan - Air Pollution Control Law - Emission Standards for Air Pollutants

None Listed

Inventory - Japan - Industrial Safety and Health Law Substances (ISHL)

None Listed

Korea

Labor

Korea - MOE - Harmful Substances

None Listed

Korea - ISHA - Name, Toxicity and Protective Measures of New Chemical Substances

None Listed

Environment

Korea - MOE - Toxic Chemicals Control Act (TCCA) - Observational Chemicals

None Listed

Malaysia

Labor

Malaysia - Occupational Safety & Health - Risk Phrases

None Listed

Thailand

Labor

Thailand - Air Contaminant Standards
None Listed

Environment

Thailand - Quantities of Chemicals
None Listed

Other

Thailand - Hazardous Substances
None Listed

United States

Environment

U.S. - CAA (Clean Air Act) - 1990 Hazardous Air Pollutants

None Listed

U.S. - CAA (Clean Air Act) - Class I Ozone Depletors

None Listed

U.S. - CAA (Clean Air Act) - Class II Ozone Depletors

None Listed

U.S. - CERCLA/SARA - Hazardous Substances and their Reportable Quantities

- Disodium Phosphate

Anhydrous P (Chemical

Name-Sodium phosphate 7558-79-4 5000 lb final RQ; 2270 kg final RQ
dibasic)

- Sodium salt 7558-79-4 100% 5000 lb final RQ; 2270 kg final RQ
phosphoric acid (1

U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances EPCRA RQs

None Listed

U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances TPQs

None Listed

U.S. - CERCLA/SARA - Section 313 - PBT Chemical Listing

None Listed

U.S. - RCRA (Resource Conservation & Recovery Act) - List for Hazardous Constituents

None Listed

U.S. - SDWA (Safe Drinking Water Act) - CCL (Contaminant Candidate List)

None Listed

Vietnam

Environment

Vietnam - Air Quality - Ambient Air Quality Standards

None Listed

Vietnam - Air Quality - Industrial Emission Standards

None Listed

Vietnam - Air Quality - Maximum Allowable Concentration of Highly Hazardous Chemicals

None Listed

Other Information

- FDA Status: This product meets the compositional requirements of: 21 CFR 182.1778 SODIUM PHOSPHATE

Section 16 - Other Information

Expiration Date

- 08/13/2004

Last Revision Date

- 09/15/2010

Malaysia - Occupational Safety & Health - Safety Phrases

None Listed

Environment

Malaysia - Clean Air Regulations - Noxious and Offensive Substances

None Listed

Mexico

Environment

Mexico - Pollutant Release and Transfer Register - Reporting Emissions - Threshold Quantities

None Listed

Other

Mexico - Hazard Classifications

None Listed

Mexico - Regulated Substances

None Listed

New Zealand

Other

New Zealand - Ozone Depleting Substances

None Listed

Other Agency Information

Other

AIHA - Emergency Response Planning Guidelines - ERPG-1 Values

None Listed

AIHA - Emergency Response Planning Guidelines - ERPG-2 Values

None Listed

AIHA - Emergency Response Planning Guidelines - ERPG-3 Values

None Listed

Philippines

Environment

Philippines - Ozone Depleting Substances - Annex A - Group I

None Listed

Other

Philippines - Priority Chemical List

None Listed

Singapore

Environment

Singapore - Air Impurities Emission Limits

None Listed

Singapore - List of Hazardous Substances

None Listed

South Africa

Labor

South Africa - General Machinery Regulations - Notifiable Substances

None Listed

Taiwan

Environment

Taiwan - Toxic Chemical Substances Control Act - Threshold Regulated Quantities

None Listed

Taiwan - Toxic Chemical Substances Control Act - Classification and Control Levels

None Listed

Disclaimer/Statement of Liability

- The information herein is given in good faith but no warranty, expressed or implied, is made.

Key to abbreviations

NDA = No Data Available



SAFETY DATA SHEET

According to OSHA Hazard Communication Standard 2012

Revision date: 09-Mar-2016

Supersedes: 13-Jan-2015

SDS 10823

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product Identifier

Product name: BENTONE® 155

Other means of identification

Recommended use of the chemical and restrictions on use

Product Use Description: Rheological additive

Details of the supplier of the safety data sheet

Company/Undertaking Identification Elementis Specialties, Inc.
469 Old Trenton Road
East Windsor, NJ 08512
USA
Tel: +1 609 443 2500
Fax: +1 609 443 2422

Elementis UK Ltd.
c/o Elementis GmbH
Stolberger Str. 370
50933 Cologne, Germany
Tel. +49 (0) 221 2923 2000

Emergency Telephone Number For Chemical Emergency ONLY (spill, leak, fire, exposure or accident), call CHEMTREC at: 1-800-424-9300 or 1-703-527-3887

For ALL other inquiries about this product, call Elementis Specialties at: 1-609-443-2000 (USA) or +49 (0) 221 2923 2000 (EU)

Product_Stewardship@elementis.com

2. HAZARDS IDENTIFICATION

Classification

OSHA Regulatory Status

This product is considered hazardous as defined under OSHA's Hazard Communication Standard (29 CFR 1910.1200).

Carcinogenicity	Category 1A
Specific target organ toxicity (repeated exposure)	Category 2

Label Elements

EMERGENCY OVERVIEW

Danger

Hazard Statements

May cause cancer by inhalation
May cause damage to organs through prolonged or repeated exposure
May form combustible dust concentrations in air

**Appearance:** Powder**Physical state:** Solid**Odor:** Odourless**Precautionary Statements - Prevention**

Obtain special instructions before use
 Do not handle until all safety precautions have been read and understood
 Use personal protective equipment as required
 Do not breathe dust/fume/gas/mist/vapors/spray

Precautionary Statements - Response

IF exposed or concerned: Get medical advice/attention

Precautionary Statements - Storage

Store locked up

Precautionary Statements - Disposal

Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)**Other Information**

None known

3. COMPOSITION/INFORMATION ON INGREDIENTS

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Components	CAS-No	Weight %
Confidential Organoclay	Proprietary	50 - 100 %
Crystalline Silica (Quartz)	14808-60-7	2.5 - 10 %

4. FIRST AID MEASURES

FIRST AID MEASURES**General Advice**

Get medical attention immediately if symptoms occur. Show this safety data sheet to the doctor in attendance.

Inhalation:

IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing. If breathing is difficult, give oxygen.

Skin contact:

Wash off immediately with soap and plenty of water. If a person feels unwell or symptoms of skin irritation appear, consult a physician.

Eye contact:

Rinse immediately carefully and thoroughly with eye-bath or water. If eye irritation persists, consult a specialist.

Ingestion

If swallowed, seek medical advice immediately and show this SDS or label. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person.

Protection of first-aiders:

Avoid contact with skin and eyes.

Most important symptoms and effects, both acute and delayed

Most Important Symptoms and Effects Difficulty in breathing.

Indication of any immediate medical attention and special treatment needed

Notes to physician Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media

Carbon dioxide (CO₂)

Dry powder

Dry sand

Alcohol-resistant foam

Use water spray or fog; do not use straight streams

Extinguishing media which must not be used for safety reasons

None

Special exposure hazards arising from the substance or preparation itself, combustion products, resulting gases

None in particular

Unusual Fire and Explosion Hazards:

Fine dust dispersed in air, in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard

Hazardous combustion products

Carbon monoxide

Carbon dioxide (CO₂)

Nitrogen oxides (NO_x)

Gaseous hydrogen chloride (HCl)

Explosion data

Explosive properties:

Dust may form explosive mixture in air

Reactivity Hazard:

None known

Special protective equipment for fire-fighters

Wear self contained breathing apparatus for fire fighting if necessary.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions Keep people away from and upwind of spill/leak. Use personal protective equipment.

Other Information: See Section 12 for more information.

Environmental precautions

Environmental precautions: Prevent further leakage or spillage if safe to do so. Do not flush into surface water or sanitary sewer system.

Methods and material for containment and cleaning up

Clean-up methods: Take precautionary measures against static discharges. Do not create a powder cloud by using a brush or compressed air. Take up mechanically, placing in appropriate containers for disposal. Clean contaminated surface thoroughly. Prevent product from entering drains. Local authorities should be advised if significant spillages cannot be contained.

7. HANDLING AND STORAGE

Precautions for Safe Handling

Handling: Take precautionary measures against static discharges. Remove all sources of ignition. Avoid contact with skin, eyes and clothing. Avoid breathing mists, dusts, or vapors. Wash hands thoroughly after handling.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep containers dry and tightly closed to avoid moisture absorption and contamination. Keep product and empty container away from heat and sources of ignition.

Additional Storage: Not required under normal use

8. EXPOSURE CONTROLS/PERSONAL PROTECTION**Control parameters****Exposure Guidelines**

Components	OSHA STEL	OSHA PEL	OSHA TWA	OEL - Long-term TWA
Crystalline Silica (Quartz)		0.1 mg/m ³ (respirable fraction)	0.1 MGM3 (respirable fraction)	

Components	ACGIH TLV	AIHA TLV	OSHA TWA	IDLH:
Crystalline Silica (Quartz) 14808-60-7	TWA: 0.025 mg/m ³			50 mg/m ³ respirable dust

Components	WEEL Ceiling	WEEL TWA	ACGIH	WEEL STEL
Crystalline Silica (Quartz)			A2 Suspected Human Carcinogen	

TLV/PEL: Particles (insoluble or poorly soluble)
Not Otherwise Specified [PNOS]

OSHA TWA 15 mg/m³ (total dust)
5 mg/m³ (respirable fraction)
ACGIH TWA 10 mg/m³ (inhalable particles)
3 mg/m³ (respirable particles)

Appropriate engineering controls

Engineering Measures Maintain adequate engineering controls and/or ventilation to keep hazardous ingredients below their statutory limits. Use an approved respirator whenever exposure limits are exceeded

Individual protection measures, such as personal protective equipment

Eye protection Safety glasses.

Skin and body protection Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place

Respiratory protection: Effective dust mask.

Hand protection Protective gloves
Neoprene gloves
Rubber gloves

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice

9. PHYSICAL AND CHEMICAL PROPERTIES**Information on basic physical and chemical properties**

Physical state:	Solid
Appearance:	Powder
Odor:	Odourless
Color:	Off-white
Odor Threshold	No data available

<u>Property</u>	<u>Values</u>	<u>Remarks / • Method</u>
pH	No data available	
Melting point/range:	No data available	
Freezing point:	No data available	
Boiling Point/Range	No data available	
Flash Point	Not applicable	
Evaporation rate	No data available	
Explosion limits:	No data available	
Vapor pressure	No data available	
Vapor density	No data available	
Density:	1.69 g/cm ³	
Water solubility	insoluble	
Solubility in other solvents	No data available	
Partition coefficient: n-octanol/water	No data available	
Autoignition temperature	Not self-igniting	
Decomposition temperature	No data available	
Viscosity:	No data available	

Explosive properties:	Dust may form explosive mixture in air
Oxidizing Properties	No information available

Other Information

Bulk Density	No data available
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10. STABILITY AND REACTIVITY

Reactivity

No dangerous reaction known under conditions of normal use

Chemical Stability

Stable under recommended storage conditions.

Possibility of Hazardous Reactions

None known

Conditions to Avoid

Exposure to air or moisture over prolonged periods.

Incompatible Materials:

Oxidizing agent

Hazardous Decomposition Products

None reasonably foreseeable

11. TOXICOLOGICAL INFORMATION

<u>Product Information</u>	Data obtained on this product or a similar product
LD50/Oral/Rat:	> 8000 mg/kg

Information on likely routes of exposure

Inhalation:	No data available
Eye contact:	No data available
Skin contact:	No data available

Ingestion No data available

Component Information

Components	LD50/Oral	LD50/Dermal	LC50/inhalation
Crystalline Silica (Quartz) 14808-60-7	500 mg/kg		

Information on Toxicological Effects

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Corrosivity No data available

Sensitization No data available

Mutagenic effects No data available

Carcinogenic effects: This product contains one or more substances which are classified by IARC as carcinogenic to humans (Group I), probably carcinogenic to humans (Group 2A) or possibly carcinogenic to humans (Group 2B)

Components	ACGIH	IARC	NTP	OSHA
Crystalline Silica (Quartz) 14808-60-7	A2 Suspected Human Carcinogen	Group 1- Carcinogenic to Humans	Group A - Known to be human carcinogens	Present

Reproductive Toxicity: No data available

Developmental Toxicity No data available

Chronic Toxicity

Chronic toxicity: No data is available on the product itself

Target Organ Effects: Respiratory system.

Other Adverse Effects: No data available

12. ECOLOGICAL INFORMATION

Product Information The data listed, below, is based on this or a similar product:

EC50/96hr/48hr/24hr: > 2000 mg/L (Marine invertebrate; 48 hrs)
> 1000 mg/L (Marine alga; 48 hrs)

Ecotoxicity

The environmental impact of this product has not been fully investigated.

Persistence and degradability:

No data available

Bioaccumulative potential:

No data available

Mobility:

No information available

General Note:

Do not allow product to reach ground water, water course or sewage system.

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Waste from residues /unused products	Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of in accordance with federal, state and local regulations.
Contaminated packaging	Empty containers should be taken to an approved waste handling site for recycling or disposal.

RCRA Hazardous Waste:

RCRA: Not listed

14. TRANSPORT INFORMATION

U.S. Department of Transportation Ground (49 CFR): Not regulated

International Air Transport Association (IATA) Not regulated

International Maritime Dangerous Goods (IMDG) Not regulated

Surface Shipments in Europe (ADR/RID): Not regulated

15. REGULATORY INFORMATION**International Inventories**

USA (TSCA):	Complies
EU (EINECS):	Complies
REACH	Complies
CANADA (DSL)	Complies
CANADA (NDSL):	Not applicable
JAPAN (ENCS):	Complies
PHILIPPINES (PICCS):	Complies
KOREA (KECL):	Complies
China (IECSC)	Complies
AUSTRALIA (AICS):	Complies
NEW ZEALAND (NZIoC):	Complies
TAIWAN (NECI):	Complies

Legend:

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
 Registration, Evaluation, Authorization and Restriction of Chemicals (REACH)
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
ENCS - Japan Existing and New Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
AICS - Australian Inventory of Chemical Substances
NZIoC - New Zealand Inventory of Chemicals
NECI - Taiwan National Existing Chemical Inventory

Federal Regulations**SARA 313**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

SARA 311/312 Hazard Categories

Chronic Health Hazard

CWA (Clean Water Act)

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

TSCA Section 12(b) Export Notification

This product does not contain chemicals that are required to be notified under the TSCA 12(b) Export Notification.

State Regulations (RTK)

California Proposition 65

This Product contains the following substance (s) known to the state of California to cause cancer and/or developmental effects.

Components	Carcinogen	Reproductive toxicity	No significant risk level
Crystalline Silica (Quartz) 14808-60-7	Listed		

16. OTHER INFORMATION

HMIS:

Health: 1 *
Flammability: 1
Physical Hazard: 0

Previous Revision Date: 13-Jan-2015

Key/Legend: N/A: Not applicable
N/D: Not determined
ppm: Parts per million
X: Listed

Prepared by Product Stewardship

The information provided in this Safety Data Sheet is correct to the best of ELEMENTIS' knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release, and is not to be considered a warranty or quality specification. The information relates only to the specific product designated and may not be valid for such product when used in combination with any other material or in any process, unless specified in this SDS. ELEMENTIS specifically disclaims any liability for any loss, injury or damage which may result from use or misuse of this product. All chemicals should be handled only by competent personnel, within a controlled environment. It is the buyer's/user's responsibility to ensure that his activities comply with all applicable federal, state, provincial and local laws, and to determine the conditions necessary for the safe use of this product. ELEMENTIS urges each customer or recipient of this SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this SDS and any hazards associated with the product.

End of Safety Data Sheet

SAFETY DATA SHEET

M32415 - ANSI - EN



Occidental Chemical Corporation

A subsidiary of Occidental Petroleum Corporation

CAUSTIC SODA LIQUID (ALL GRADES)

SDS No.: M32415

SDS Revision Date: 09-Feb-2017

SECTION 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Company Identification:	Occidental Chemical Corporation 5005 LBJ Freeway P.O. Box 809050 Dallas, TX 75380-9050 1-800-752-5151
24 Hour Emergency Telephone Number:	1-800-733-3665 or 1-972-404-3228 (USA); CANUTEC (Canada): 1-613-996-6666; CHEMTREC (within USA and Canada): 1-800-424-9300; CHEMTREC (outside USA and Canada): +1 703-527-3887; CHEMTREC Contract No: CCN16186
To Request an SDS:	MSDS@oxy.com or 1-972-404-3245
Customer Service:	1-800-752-5151 or 1-972-404-3700
Product Identifier:	CAUSTIC SODA LIQUID (ALL GRADES)
Trade Name:	Caustic Soda Diaphragm Grade 10%, 15%, 18%, 20%, 25%, 30%, 35%, 40%, 50%, Caustic Soda Membrane 6%, 18%, 20%, 25%, 30%, 48%, 50%, 50% Caustic Soda Membrane OS, 50% Caustic Soda Diaphragm OS, Caustic Soda Low Salt 50%, Membrane Blended, 50% Caustic Soda Diaphragm (West Coast), Membrane Cell Liquor
Synonyms:	Sodium hydroxide solution, Liquid Caustic, Lye Solution, Caustic, Lye, Soda Lye, Secondary Caustic Soda Liquids
Product Use:	Pulp Industry, Metal finishing, Cleaner, Process chemical, Petroleum Industry
Uses Advised Against:	None identified

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SECTION 2. HAZARDS IDENTIFICATION

OSHA REGULATORY STATUS: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

EMERGENCY OVERVIEW:

Color: Colorless to slightly colored
Physical State: Liquid
Appearance: Clear to opaque
Odor: Odorless
Signal Word: **DANGER**

MAJOR HEALTH HAZARDS: CORROSIVE. CAUSES SERIOUS EYE DAMAGE. CAUSES SEVERE SKIN BURNS AND EYE DAMAGE. MAY CAUSE RESPIRATORY IRRITATION. EFFECTS OF CONTACT OR INHALATION MAY BE DELAYED.

PHYSICAL HAZARDS: MAY BE CORROSIVE TO METALS. Mixing with water, acid or incompatible materials may cause splattering and release of heat. Do not store in aluminum container or use aluminum fittings or transfer lines, as flammable hydrogen gas may be generated.

ECOLOGICAL HAZARDS: This material has exhibited moderate toxicity to aquatic organisms. Keep out of water supplies and sewers. This material is alkaline and may raise the pH of surface waters.

PRECAUTIONARY STATEMENTS: Do not get in eyes, on skin, or on clothing. Wear eye protection, face protection, protective gloves. Do not breathe mist, vapors, or spray. Do not ingest. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Wash thoroughly after handling- exposure can cause burns which are not immediately painful or visible.

ADDITIONAL HAZARD INFORMATION: This material is corrosive. It may cause severe burns and permanent damage to any tissue with which it comes into contact. Toxicity may be delayed, and may not be readily visible. To treat contacted tissue, flush with water to dilute. There is no specific antidote. Significant exposures must be referred for medical attention immediately.

GHS CLASSIFICATION:

GHS: PHYSICAL HAZARDS:	Corrosive to Metals Mixing with water may cause splattering and release of heat
GHS: CONTACT HAZARD - SKIN:	Category 1B - Causes severe skin burns and eye damage
GHS: CONTACT HAZARD - EYE:	Category 1 - Causes serious eye damage
GHS: TARGET ORGAN TOXICITY (SINGLE	Category 3 - May cause respiratory irritation

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EXPOSURE):	
HAZARDOUS TO AQUATIC ENVIRONMENT - ACUTE HAZARD:	Category 3 - Harmful to aquatic life

UNKNOWN ACUTE TOXICITY: 100% of the mixture consists of ingredient(s) of unknown toxicity. There is no acute toxicity data available for this product.

GHS SYMBOL: Corrosive



GHS SIGNAL WORD: **DANGER**

GHS HAZARD STATEMENTS:**GHS - Physical Hazard Statement(s)**

- May be corrosive to metals

GHS - Health Hazard Statement(s)

- Causes serious eye damage
- Causes severe skin burns and eye damage
- May cause respiratory irritation

GHS - Precautionary Statement(s) - Prevention

- Do not breathe mist, vapors, or spray
- Wear protective gloves, protective clothing, eye, and face protection
- Wash thoroughly after handling
- Keep only in original container
- Use only outdoors or in a well-ventilated area

GHS - Precautionary Statement(s) - Response

- IF ON SKIN (or hair): Remove/Take off Immediately all contaminated clothing. Rinse SKIN with water/shower
- Wash contaminated clothing before reuse
- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
- Immediately call a POISON CENTER or doctor/physician
- IF INHALED: Remove person to fresh air and keep comfortable for breathing
- Immediately call a POISON CENTER or doctor/physician
- IF SWALLOWED: Rinse mouth. Do NOT induce vomiting
- IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
- Specific treatment (see First Aid information on product label and/or Section 4 of the SDS)
- Absorb spillage to prevent material damage

GHS - Precautionary Statement(s) - Storage

- Store locked up
- Store in a well-ventilated place. Keep container tightly closed
- Store in corrosive resistant and NON-ALUMINUM container with a resistant inner liner (NOTE: flammable hydrogen gas may be generated if aluminum container and/or aluminum fittings are used)

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GHS - Precautionary Statement(s) - Disposal

- Dispose of contents and container in accordance with applicable local, regional, national, and/or international regulations

Hazards Not Otherwise Classified (HNOC)

Mixing with water may cause splattering and release of heat

Additional Hazard Information

Mixing with water may cause splattering and release of heat

See Section 11: TOXICOLOGICAL INFORMATION**SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS**

Synonyms: Sodium hydroxide solution, Liquid Caustic, Lye Solution, Caustic, Lye, Soda Lye, Secondary Caustic Soda Liquids

Component	Percent [%]	CAS Number
Water	48.5 - 94.5	7732-18-5
Sodium Hydroxide	5.5 - 51.5	1310-73-2
Sodium Chloride	0 - 35	7647-14-5

Notes: All hazardous and non-hazardous components of product composition are listed.

SECTION 4. FIRST AID MEASURES

INHALATION: If inhalation of mists, vapors, or spray occurs and adverse effects result, remove to uncontaminated area. Evaluate ABC's (is Airway constricted, is Breathing occurring, and is blood Circulating) and treat symptomatically. GET MEDICAL ATTENTION IMMEDIATELY. There is no specific antidote, treat symptomatically.

SKIN CONTACT: Immediately flush contaminated areas with water. Remove contaminated clothing, jewelry, and shoes immediately. Wash contaminated areas with large amounts of water. GET MEDICAL ATTENTION IMMEDIATELY. Thoroughly clean and dry contaminated clothing before reuse. Discard contaminated leather goods.

EYE CONTACT: Immediately flush contaminated eyes with a directed stream of water for as long as possible. Remove contact lenses, if present and easy to do. Continue rinsing. GET MEDICAL ATTENTION IMMEDIATELY. Washing eyes within several seconds is essential to achieve maximum effectiveness.

INGESTION: If swallowed, do not induce vomiting. For definite or probable ingestion, do not administer oral fluids. If vomiting occurs spontaneously, keep airway clear. Monitor airway. Volume resuscitation (IV fluids) and circulatory support (CPR) may be required. Never give anything by mouth to an unconscious or convulsive person. GET MEDICAL ATTENTION IMMEDIATELY.

Most Important Symptoms/Effects (Acute and Delayed):

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Acute Symptoms/Effects:

Inhalation (Breathing): Respiratory System Effects: Exposure to airborne material may cause irritation, redness of upper and lower airways, coughing, laryngeospasm, shortness of breath, bronchoconstriction, and possible pulmonary edema. Severe and permanent scarring may occur. Pulmonary edema may develop several hours after a severe acute exposure. Aspiration of this material may cause the same conditions.

Skin: Skin Corrosion. Exposure to skin may cause redness, itching, irritation, swelling, burns (first, second, or third degree), liquefaction of skin, and damage to underlying tissues (deep and painful wounds).

Eye: Serious Eye Damage. Eye exposures may cause eye lid burns, conjunctivitis, corneal edema, corneal burn, corneal perforation, damage to internal contents of the eye, permanent visual defects, and blindness and/or loss of the eye.

Ingestion (Swallowing): Gastrointestinal System Effects: Exposure by ingestion may cause irritation, swelling, and perforation of upper and lower gastrointestinal tissues. Permanent scarring may occur.

Delayed Symptoms/Effects:

Skin: Repeated and prolonged skin contact may cause a chronic dermatitis.

Interaction with Other Chemicals Which Enhance Toxicity: None known.

Medical Conditions Aggravated by Exposure: May aggravate preexisting conditions such as: eye disorders that decrease tear production or have reduced integrity of the eye; skin disorders that compromise the integrity of the skin; and respiratory conditions including asthma and other breathing disorders.

Protection of First-Aiders: Protect yourself by avoiding contact with this material. Avoid contact with skin and eyes. Do not breathe vapors or spray mist. Do not ingest. Use personal protective equipment. Refer to Section 8 for specific personal protective equipment recommendations. At minimum, treating personnel should utilize PPE sufficient for prevention of bloodborne pathogen transmission.

Notes to Physician: Medical observation and assessment is recommended for all ingestions, all eye exposures, and symptomatic inhalation and dermal exposures. For symptomatic ingestion, do not administer oral fluids and consider investigation by endoscopy, X-ray, or CT scan. Esophageal perforation, airway compromise, hypotension, and shock are possible. For prolonged exposures and significant exposures, consider delayed injury to exposed tissues. There is no antidote. Treatment is supportive care. Follow normal parameters for airway, breathing, and circulation. Surgical intervention may be required.

SECTION 5. FIRE-FIGHTING MEASURES

Fire Hazard: Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes. May react with chemically reactive metals such as aluminum, zinc, magnesium, copper, etc. to release hydrogen gas which can form explosive mixtures in air.

Extinguishing Media: Use extinguishing agents appropriate for surrounding fire

Fire Fighting: Move container from fire area if it can be done without risk. Cool containers with water. Do not apply water directly on this product. Heat is generated when mixed with water. Wear NIOSH approved positive-pressure self-contained breathing apparatus operated in pressure demand mode. Avoid contact with skin.

Component	Immediately Dangerous to Life/ Health (IDLH)
Sodium Hydroxide	10 mg/m ³ IDLH

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1310-73-2

Hazardous Combustion Products:

Sodium hydroxide fumes can be generated by thermal decomposition at elevated temperatures

Sensitivity to Mechanical Impact: Not sensitive.

Sensitivity to Static Discharge: Not sensitive.

Lower Flammability Level (air): Not flammable

Upper Flammability Level (air): Not flammable

Flash point: Not flammable

Auto-ignition Temperature: Not applicable

GHS: PHYSICAL HAZARDS:

- Corrosive to Metals
- Mixing with water may cause splattering and release of heat

SECTION 6. ACCIDENTAL RELEASE MEASURES**Personal Precautions:**

Do not get in eyes, on skin or on clothing. Avoid breathing mist, vapor, or spray. Do not ingest. Wear appropriate personal protective equipment recommended in Section 8 of the SDS.

Environmental Precautions:

Keep out of water supplies and sewers. Do not flush into surface water or sanitary sewer system. This material is alkaline and may raise the pH of surface waters with low buffering capacity. Releases should be reported, if required, to appropriate agencies.

Methods and Materials for Containment and Cleaning Up:

In case of spill or leak, stop the leak as soon as possible, if safe to do so. Completely contain spilled materials with dikes, sandbags, etc. Shovel dry material into suitable container. Liquid material may be removed with a vacuum truck. Remaining material may be diluted with water and neutralized with dilute acid, then absorbed and collected. Flush spill area with water, if appropriate.

Additional Disaster Prevention Measures:**SECTION 7. HANDLING AND STORAGE****Precautions for Safe Handling:**

Avoid breathing vapor or mist. Do not get in eyes, on skin, or on clothing. Wash thoroughly after handling. Do not ingest. Do not eat, drink or smoke in areas where this material is used. Wear personal protective equipment as described in Exposure Controls/Personal Protection (Section 8) of the SDS. NEVER add water to product. When

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mixing, slowly add to water to minimize heat generation and spattering.

Safe Storage Conditions:

Store and handle in accordance with all current regulations and standards. Keep container tightly closed and properly labeled. Do not store in aluminum container or use aluminum fittings or transfer lines, as flammable hydrogen gas may be generated. Keep separated from incompatible substances (see below or Section 10 of the Safety Data Sheet).

Incompatibilities/ Materials to Avoid:

Acids and halogenated compounds, Prolonged contact with aluminum, brass, bronze, copper, lead, tin, zinc or other alkali sensitive metals or alloys, Releases heat when diluted in water

GHS: PHYSICAL HAZARDS:

- Corrosive to Metals
- Mixing with water may cause splattering and release of heat

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Regulatory Exposure Limit(s): Listed below for the product components that have regulatory occupational exposure limits (OEL's).

Component	OSHA Final PEL TWA	OSHA Final PEL STEL	OSHA Final PEL Ceiling
Sodium Hydroxide 1310-73-2	2 mg/m ³	-----	-----
Sodium Chloride 7647-14-5	-----	-----	-----

OEL: Occupational Exposure Limit; OSHA: United States Occupational Safety and Health Administration; PEL: Permissible Exposure Limit; TWA: Time Weighted Average; STEL: Short Term Exposure Limit

NON-REGULATORY EXPOSURE LIMIT(S): Listed below for the product components that have non-regulatory occupational exposure limits (OEL's).

Component	ACGIH TWA	ACGIH STEL	ACGIH Ceiling	OSHA TWA (Vacated)	OSHA STEL (Vacated)	OSHA Ceiling (Vacated)
Sodium Hydroxide	-----	-----	2 mg/m ³	-----	-----	2 mg/m ³

- The Non-Regulatory United States Occupational Safety and Health Administration (OSHA) limits, if shown, are the Vacated 1989 PEL's (vacated by 58 FR 35338, June 30, 1993).

- The American Conference of Governmental Industrial Hygienists (ACGIH) is a voluntary organization of professional industrial hygiene personnel in government or educational institutions in the United States. The ACGIH develops and publishes recommended occupational exposure limits each year called Threshold Limit Values (TLVs) for hundreds of chemicals, physical agents, and biological exposure indices.

ENGINEERING CONTROLS: Provide local exhaust ventilation where dust or mist may be generated. Ensure compliance with applicable exposure limits.

PERSONAL PROTECTIVE EQUIPMENT:

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Eye Protection: Wear chemical safety goggles with a face shield to protect against eye and skin contact when appropriate. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

Skin and Body Protection: Wear protective clothing to minimize skin contact. Wear chemical resistant clothing and rubber boots when potential for contact with the material exists. Always place pants legs over boots. Contaminated clothing should be removed, then discarded or laundered. Discard contaminated leather goods.

Hand Protection: Wear appropriate chemical resistant gloves. Consult a glove supplier for assistance in selecting an appropriate chemical resistant glove.

Protective Material Types:

Natural rubber, Neoprene, Nitrile, Polyvinyl chloride (PVC), Tyvek®, Tychem®

Respiratory Protection: A NIOSH approved respirator with N95 (dust, fume, mist) cartridges may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits, or when symptoms have been observed that are indicative of overexposure. If eye irritation occurs, a full face style mask should be used. A respiratory protection program that meets 29 CFR 1910.134 must be followed whenever workplace conditions warrant use of a respirator.

Component	Immediately Dangerous to Life/ Health (IDLH)
Sodium Hydroxide 1310-73-2	10 mg/m ³ IDLH

HYGIENE MEASURES: Handle in accordance with good industrial hygiene and safety practices. Wash hands and affected skin immediately after handling, before breaks, and at the end of the workday. When using do not eat or drink. When using do not smoke.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Liquid
Appearance:	Clear to opaque
Color:	Colorless to slightly colored
Odor:	Odorless
Odor Threshold [ppm]:	No data available.
Molecular Weight:	40.01
Molecular Formula:	NaOH
Decomposition Temperature:	No data available
Boiling Point/Range:	215 - 291°F (102 - 144°C)
Freezing Point/Range:	-26 to 59°F (-32 to 15 °C).
Vapor Pressure:	13 - 135 mmHg @ 60 °C
Vapor Density (air=1):	No data available
Relative Density/Specific Gravity (water=1):	1.05 – 1.56 @ 15.6 °C
Density:	8.8 - 13.0 lbs/gal @ 15.6 °C
Water Solubility:	100%
pH:	14.0 (theoretical value of 7.5% solution)
Volatility:	No data available
Evaporation Rate (ether=1):	No data available
Partition Coefficient	No data available

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(n-octanol/water):

Flash point:	Not flammable
Flammability (solid, gas):	Not flammable
Lower Flammability Level (air):	Not flammable
Upper Flammability Level (air):	Not flammable
Auto-ignition Temperature:	Not applicable
Viscosity:	About 24cp for 50% solution at 40 °C (104 °F)

SECTION 10. STABILITY AND REACTIVITY

Chemical Stability: Stable at normal temperatures and pressures.

Reactivity: Soluble in water, releasing heat sufficient to ignite combustibles. Reacts with metals, and may form hydrogen gas.

Possibility of Hazardous Reactions: Mixing with water, acid, or incompatible materials may cause splattering and release of large amounts of heat. Will react with some metals forming flammable hydrogen gas. Carbon monoxide gas may form upon contact with reducing sugars, food and beverage products in enclosed spaces.

Conditions to Avoid: (e.g., static discharge, shock, or vibration) -. None known.

Incompatibilities/ Materials to Avoid: Acids and halogenated compounds, Prolonged contact with aluminum, brass, bronze, copper, lead, tin, zinc or other alkali sensitive metals or alloys, Releases heat when diluted in water.

Hazardous Decomposition Products: Toxic fumes of sodium oxide.

Hazardous Polymerization: Will not occur.

SECTION 11. TOXICOLOGICAL INFORMATION

IRRITATION DATA: PRIMARY SKIN IRRITATION: Severe Irritation, Corrosive (rabbit, 24 hr)

PRIMARY EYE IRRITATION: Severe Irritation, Corrosive (rabbit, 24 hr)

TOXICITY DATA:**PRODUCT TOXICITY DATA: CAUSTIC SODA LIQUID (ALL GRADES)**

LD50 Oral: No reliable data available	LD50 Dermal: No reliable data available	LC50 Inhalation: No data available
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COMPONENT TOXICITY DATA:

Note: The component toxicity data is populated by the LOLI database and may differ from the product toxicity data given.

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POTENTIAL HEALTH EFFECTS:

Eye contact:	Corrosive. Causes serious eye damage which can result in: severe irritation, pain and burns, and permanent damage including blindness.
Skin contact:	Corrosive. Causes severe skin burns. Prolonged or repeat skin exposures can result in dermatitis.
Inhalation:	Corrosive. Inhalation injury may result from ingestion and/or aspiration of this material. May cause severe irritation of the respiratory tract with potential airway compromise, coughing, choking, pain, and burns of the mucous membrane and respiratory system. This material can be extremely destructive to the tissue of the mucus membranes and respiratory system. Aspiration may cause chemical pneumonitis, pulmonary edema, damage to lung tissue, death.
Ingestion:	Corrosive. If swallowed, may cause severe oral and esophageal, mucus membrane, and gastrointestinal burns and possible perforation. If swallowed, may pose a lung aspiration hazard during vomiting.
Chronic Effects:	Repeated or prolonged skin contact may result in dermatitis.

SIGNS AND SYMPTOMS OF EXPOSURE:

This material may cause severe burns and permanent damage to any tissue with which it comes into contact. It can cause serious burns and extensive tissue destruction resulting in liquefaction, necrosis and/or perforation. Signs and symptoms of exposure vary, and are dependent on the route of exposure, degree of exposure, and duration of exposure.

Inhalation (Breathing): Respiratory System Effects: Exposure to airborne material may cause irritation, redness of upper and lower airways, coughing, laryngeospasm, shortness of breath, bronchoconstriction, and possible pulmonary edema. Severe and permanent scarring may occur. Pulmonary edema may develop several hours after a severe acute exposure. Aspiration of this material may cause the same conditions.

Skin: Skin Corrosion. Exposure to skin may cause redness, itching, irritation, swelling, burns (first, second, or third degree), liquefaction of skin, and damage to underlying tissues (deep and painful wounds).

Eye: Serious Eye Damage. Eye exposures may cause eye lid burns, conjunctivitis, corneal edema, corneal burn, corneal perforation, damage to internal contents of the eye, permanent visual defects, and blindness and/or loss of the eye.

Ingestion (Swallowing): Gastrointestinal System Effects: Exposure by ingestion may cause irritation, swelling, and perforation of upper and lower gastrointestinal tissues. Permanent scarring may occur.

TOXICITY:

When in solution, this material will affect all tissues with which it comes in contact. The severity of the tissue damage is a function of its concentration, the length of tissue contact time, and local tissue conditions. After exposure there may be a time delay before irritation and other effects occur. This material is a strong irritant and is corrosive to the skin, eyes, and mucus membranes. This material may cause severe burns and permanent damage to any tissue with which it comes into contact.

Interaction with Other Chemicals Which Enhance Toxicity: None known.

GHS HEALTH HAZARDS:

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GHS: CONTACT HAZARD - EYE: Category 1 - Causes serious eye damage**Skin Absorbent / Dermal Route?** No.**SPECIFIC TARGET ORGAN TOXICITY (Single Exposure):**

Category 3 - Respiratory Irritation

SECTION 12. ECOLOGICAL INFORMATION**ECOTOXICITY DATA:**

<u>Component</u>	<u>Freshwater Fish</u>	<u>Invertebrate Toxicity:</u>	<u>Algae Toxicity:</u>	<u>Other Toxicity:</u>
Sodium Chloride	LC50, fathead minnow (Pimephales promelas): 10,610 mg/l	LC50, water flea Daphnia magna: 4,571 mg/l	IC50, OECD 209 Test; activated sludge, respiration inhibition: > 1,000 mg/l	IC50, OECD 209 Test; activated sludge, respiration inhibition: > 1,000 mg/l

Aquatic Toxicity:

This material has exhibited moderate toxicity to aquatic organisms.
Data provided are for sodium hydroxide

Invertebrate Toxicity:

EC50 Daphnia magna: 100 ppm
EC50 Shrimp: 33 - 100 ppm/48 hr.
EC50 Cockle: 330 - 1000 ppm/48 hr.

FATE AND TRANSPORT:**BIODEGRADATION:** This material is inorganic and not subject to biodegradation.**PERSISTENCE:** This material is alkaline and may raise the pH of surface waters with low buffering capacity. This material is believed to exist in the disassociated state in the environment.**BIOCONCENTRATION:** This material is not expected to bioconcentrate in organisms.**BIOACCUMULATIVE POTENTIAL:** Does not bioaccumulate.**MOBILITY IN SOIL:** No data available.**ADDITIONAL ECOLOGICAL INFORMATION:** This material has exhibited slight toxicity to terrestrial organisms. This material has exhibited moderate toxicity to aquatic organisms.**SECTION 13. DISPOSAL CONSIDERATIONS**

CAUSTIC SODA LIQUID (ALL GRADES)

SDS No.: M32415

SDS Revision Date: 09-Feb-2017

Waste from material:

Reuse or reprocess, if possible. May be subject to disposal regulations. Dispose in accordance with all applicable regulations.

Container Management:

Dispose of container in accordance with applicable local, regional, national, and/or international regulations. Container rinsate must be disposed of in compliance with applicable regulations.

SECTION 14. TRANSPORT INFORMATION**LAND TRANSPORT****U.S. DOT 49 CFR 172.101:**

UN NUMBER: UN1824
PROPER SHIPPING NAME: Sodium Hydroxide Solution
HAZARD CLASS/ DIVISION: 8
PACKING GROUP: II
LABELING REQUIREMENTS: 8

RQ (lbs): RQ 1000 lbs. (Sodium Hydroxide)

CANADIAN TRANSPORTATION OF DANGEROUS GOODS:

UN NUMBER: UN1824
SHIPPING NAME: Sodium hydroxide solution
CLASS OR DIVISION: 8
PACKING/RISK GROUP: II
LABELING REQUIREMENTS: 8

MARITIME TRANSPORT (IMO / IMDG) :

UN NUMBER: UN1824
PROPER SHIPPING NAME: Sodium hydroxide solution
HAZARD CLASS / DIVISION: 8
Packing Group: II
LABELING REQUIREMENTS: 8

SECTION 15. REGULATORY INFORMATION**U.S. REGULATIONS****OSHA REGULATORY STATUS:**

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200)

CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4):

CAUSTIC SODA LIQUID (ALL GRADES)**SDS No.:** M32415**SDS Revision Date:** 09-Feb-2017

If a release is reportable under CERCLA section 103, notify the state emergency response commission and local emergency planning committee. In addition, notify the National Response Center at (800) 424-8802 or (202) 426-2675.

Component	CERCLA Reportable Quantities:
Sodium Hydroxide	1000 lb (final RQ)

SARA EHS Chemical (40 CFR 355.30)

No components are listed

EPCRA SECTIONS 311/312 HAZARD CATEGORIES (40 CFR 370.10):

Acute Health Hazard

EPCRA SECTION 313 (40 CFR 372.65):

No components are listed

DEPARTMENT OF HOMELAND SECURITY (DHS)- Chemical Facility Anti-Terrorism Standards (6 CFR 27):

No components in this material are regulated under DHS

OSHA PROCESS SAFETY (PSM) (29 CFR 1910.119):

Not regulated

FDA: This material has Generally Recognized as Safe (GRAS) status under specific FDA regulations. Additional information is available from the Code of Federal Regulations which is accessible on the FDA's website. This product is not produced under all current Good Manufacturing Practices (cGMP) requirements as defined by the Food and Drug Administration (FDA).

NATIONAL INVENTORY STATUS

U.S. INVENTORY STATUS: Toxic Substance Control Act (TSCA): All components are listed or exempt.

U.S. INVENTORY STATUS: Toxic Substance Control Act (TSCA): All components are listed or exempt.

TSCA 12(b): This product is not subject to export notification.

Canadian Chemical Inventory: All components of this product are listed on either the DSL or the NDSL.

Component	DSL	NDSL
Sodium Hydroxide 1310-73-2	Listed	Not Listed
Sodium Chloride 7647-14-5	Listed	Not Listed

STATE REGULATIONS**California Proposition 65:**

This product and its ingredients are not listed, but it may contain impurities/trace elements known to the State of California to cause cancer or reproductive toxicity as listed under Proposition 65 State Drinking Water and Toxic Enforcement Act. For additional information, contact OxyChem Technical Services at 1-800-733-1165.

CAUSTIC SODA LIQUID (ALL GRADES)

SDS No.: M32415

SDS Revision Date: 09-Feb-2017

Component	California Proposition 65 Cancer WARNING:	California Proposition 65 CRT List - Male reproductive toxin:	California Proposition 65 CRT List - Female reproductive toxin:	Massachusetts Right to Know Hazardous Substance List	New Jersey Right to Know Hazardous Substance List	New Jersey Special Health Hazards Substance List
Sodium Hydroxide 1310-73-2	Not Listed	Not Listed	Not Listed	Listed	1706	corrosive

Component	New Jersey - Environmental Hazardous Substance List	Pennsylvania Right to Know Hazardous Substance List	Pennsylvania Right to Know Special Hazardous Substances	Pennsylvania Right to Know Environmental Hazard List	Rhode Island Right to Know Hazardous Substance List
Sodium Hydroxide 1310-73-2	Not Listed	Listed	Not Listed	Present	Listed

CANADIAN REGULATIONS

• This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations

Component	Canadian Chemical Inventory:	NDSL:	WHMIS - Classifications of Substances:
Sodium Hydroxide	Listed		E
Sodium Chloride	Listed		Uncontrolled product according to WHMIS classification criteria

SECTION 16. OTHER INFORMATION

Prepared by: OxyChem Corporate HESS - Product Stewardship

Rev. Date: 09-Feb-2017

Other information:

: Listed below.

Health Rating: 3**Flammability:** 0**Reactivity Rating:** 1**Reason for Revision:**

- Changed GHS Classification: SEE SECTION 2
- Toxicological Information has been revised: SEE SECTION 11

IMPORTANT:

The information presented herein, while not guaranteed, was prepared by technical personnel and is true and accurate to the best of our knowledge. NO WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE, OR WARRANTY OR GUARANTY OF ANY OTHER KIND, EXPRESSED OR IMPLIED, IS MADE REGARDING PERFORMANCE, SAFETY, SUITABILITY, STABILITY OR OTHERWISE. This information is not intended to be all-inclusive as to the manner and conditions of use, handling, storage, disposal and other factors that may involve other or additional legal, environmental, safety or performance considerations, and Occidental Chemical Corporation assumes no liability whatsoever for the use of or reliance upon this information. While our technical personnel will be happy to respond to questions, safe handling and use of the product remains the responsibility of the customer. No suggestions for use are intended as, and nothing herein shall be construed as, a

CAUSTIC SODA LIQUID (ALL GRADES)

SDS No.: M32415

SDS Revision Date: 09-Feb-2017

recommendation to infringe any existing patents or to violate any Federal, State, local or foreign laws

OSHA Standard 29 CFR 1910.1200 requires that information be provided to employees regarding the hazards of chemicals by means of a hazard communication program including labeling, safety data sheets, training and access to written records. We request that you, and it is your legal duty to, make all information in this Safety Data Sheet available to your employees

End of Safety Data Sheet



EU SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 and Regulation (EU) No 453/2010 (REACH)

Date of print: 29.07.2011
Revision date: 27.07.2011
Date of first version: 27.07.2011

Dibasic Esters (DBE)

Version 1 / Page 1 of 8

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Trade name: Dibasic Esters (DBE)

1.2 Relevant identified uses of the substance or mixture and uses advised against

General use: Chemical basic material

Identified uses

Industrial use:

1. Manufacture of substance
2. Distribution of substance
3. Use as an intermediate
4. Formulation & (re)packing of substances and mixtures
5. Uses in coatings
6. Use in Cleaning Agents
7. Use in Oil and Gas field drilling and production operations
8. Lubricants
9. Metal working fluids
10. Blowing agents
11. Use as binders and release agents
12. Use as a fuel
13. Use in functional fluids
14. Use in laboratories
15. Polymer production
16. Rubber production and processing
17. Polymer processing
18. Water treatment chemicals
19. Mining chemicals

Professional use:

1. Uses in coatings
2. Use in Cleaning Agents
3. Use in Oil and Gas field drilling and production operations
4. Lubricants
- 5.. Metal working fluids
6. Use as binders and release agents
7. Use as a fuel
8. Use in functional fluids
9. De-icing and anti-icing applications
10. Road and construction applications
11. Use in laboratories
12. Explosives manufacture & use
13. Polymer processing
14. Water treatment chemicals
15. Use in agrochemicals

Consumer uses: Private households (= general public = consumers)

1. Uses in coatings
2. Use in Cleaning Agents
3. Lubricants
- 4.. Use in agrochemicals
5. Use as a fuel
6. Use in functional fluids



EU SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 and Regulation (EU) No 453/2010 (REACH)

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Revision date: 27.07.2011
Date of first version: 27.07.2011

Dibasic Esters (DBE)

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1.3 Details of the supplier of the safety data sheet

Company name: SHANDONG YUANLI SCIENCE AND TECHNOLOGY CO.,LTD.
Street/POB-No.: IndustryPark ,ZhuliuStreet,ChangLeCounty,Weifang City
State/city/postal code: ShandongProvince,China, 262400
Telephone: (86) 536 6776686/6776567
Telefax: (86) 536 6777188
Dept. responsible for information:

TEL:86-536-6776686/6776567 FAX:86-536-6777557
EMAIL:YUANLICHEM@VIP.SINA.COM

1.4 Emergency telephone number

(86) 536 6776858

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to EC regulation 1272/2008 (CLP):

This substance is classified as not hazardous.

Classification according to directive 67/548/EEC:

This substance is classified as not hazardous.

2.2 Label elements

Labelling (CLP)

Hazard statements not applicable

Safety precautions not applicable

Labelling (67/548/EEC or 1999/45/EC)

R phrase(s): not applicable

S phrase(s): not applicable

2.3 Other hazards

Special danger of slipping by leaking/spilling product.

SECTION 3: Composition/ information on ingredients

3.1 Substances

Chemical characterization (substance):

Reaction mass of dimethyl adipate and dimethyl glutarate and dimethyl succinate

CAS-Number: -

EINECS-Number: 906-170-0

UVCB substance - Information on ingredients:

Ingredient	Chemical name	Content	Classification
EINECS 214-277-2 CAS 1119-40-0	Dimethyl glutarate	55-65 %	EU: not applicable. CLP: not applicable.
EINECS 203-419-9 CAS 106-65-0	Dimethyl succinate	15-25 %	EU: Xi; R36. CLP: Eye Irrit. 2; H319.
EINECS 211-020-6 CAS 627-93-0	Dimethyl adipate	10-25%	EU: not applicable. CLP: not applicable.

Dibasic Esters (DBE)

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SECTION 4: First aid measures**4.1 Description of first aid measures**

- General information: Take off immediately all contaminated clothing.
Never give anything by mouth to an unconscious person.
- After inhalation: Provide fresh air.
Seek medical treatment in case of troubles.
- In case of skin contact: Thoroughly wash skin with soap and water.
Do not use solvents or thinners. In case of skin reactions, consult a physician.
- After eye contact: Immediately flush eyes with plenty of flowing water for 10 to 15 minutes holding eyelids apart. Subsequently consult an ophthalmologist.
- After swallowing: Rinse mouth thoroughly with water.
Do not induce vomiting. Seek medical attention.

4.2 Most important symptoms and effects, both acute and delayed

No data available

4.3 Indication of any immediate medical attention and special treatment needed

No special measures are required.

SECTION 5: Firefighting measures**5.1 Extinguishing media**

- Suitable extinguishing media: Water fog, extinguishing powder, carbon dioxide, alcohol resistant foam
- Extinguishing media which must not be used for safety reasons: High power water jet

5.2 Special hazards arising from the substance or mixture

Emits toxic fumes under fire conditions.

5.3 Advice for firefighters

- Special protective equipment for firefighters: Wear self-contained breathing apparatus.
- Additional information: Hazchem-Code: -
Use fine water spray to cool endangered containers. Danger of bursting container.
Contaminated fire-fighting water must be collected separately. Do not allow water used to extinguish fire to enter drains, ground or waterways. Treat runoff as hazardous.

SECTION 6: Accidental release measures**6.1 Personal precautions, protective equipment and emergency procedures**

Avoid contact with skin and eyes. Wear suitable protective clothing.
Keep away from unprotected people. Provide adequate ventilation.

6.2 Environmental precautions

Do not allow to penetrate into soil, waterbodies or drains.
In case of release, notify competent authorities.

6.3 Methods and material for containment and cleaning up

Soak up with absorbent materials such as sand, siliceous earth, acid- or universal binder.
Store in special closed containers and dispose of according to ordinance. Final cleaning.

- Additional information: Special danger of slipping by leaking/spilling product.

6.4 Reference to other sections

Refer additionally to chapter 8 and 13.

Dibasic Esters (DBE)

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SECTION 7: Handling and storage**7.1 Precautions for safe handling**

Advices on safe handling Provide adequate ventilation, and local exhaust as needed.
Avoid contact with skin, eyes, and clothing.
Avoid the formation of aerosol. Do not breathe vapour/aerosol.

Precautions against fire and explosion:
Keep away from heat. Keep away from sources of ignition. - No smoking.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storerooms and containers:
Keep container tightly closed in a cool, well-ventilated place.
Store only in original container. Store containers in upright position. Protect from frost.
Protect against heat /sun rays.
Keep locked up and out of the reach of children.

Hints on joint storage Keep away from food, drink and animal feeding stuffs.

Storage class: 10 = Combustible liquids, unless storage class 3

7.3 Specific end use(s)

Chemical basic material
Refer to 1.2

SECTION 8: Exposure controls/personal protection**8.1 Control parameters**

Additional information: Contains no substances with occupational exposure limit values.

DNEL
DNEL (Workers):
Long Term, inhalative: 8,3 mg/m³
NOAEC: Long Term, inhalative: 49,8 mg/m³
DNEL:
consumers, Long Term, inhalative: 5 mg/m³
NOAEC: Long Term, inhalative: 50 mg/m³

PNEC
PNEC water (freshwater): 0,018 mg/L.
PNEC water (marine water): 0,0018 mg/L.
PNEC water (intermittent release): 0,18 mg/L.
PNEC sediment (freshwater): 0,16 mg/kg dwt.
PNEC sediment (marine water): 0,016 mg/kg dwt.
PNEC soil: 0,09 mg/kg d.w.
PNEC sewage treatment plant: 10 mg/L.

8.2 Exposure controls

Provide adequate ventilation.

Occupational exposure controls

Respiratory protection: Respiratory protection must be worn whenever the WEL levels have been exceeded. Use filter type A-P2 according to EN 141.

Hand protection: Protective gloves according to EN 374.
Glove material: Nitrile rubber or butyl caoutchouc (butyl rubber).
Breakthrough time: >480 min.
Observe glove manufacturer's instructions concerning penetrability and breakthrough time.

Eye protection: Tightly sealed safety glasses according to EN 166.

Body protection: Wear suitable protective clothing.
In case of handling larger quantities: boots

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General protection and hygiene measures:

Take off immediately all contaminated clothing. When using do not eat, drink or smoke. Wash hands before breaks and after work. Avoid contact with skin and eyes. Do not breathe vapour/aerosol. Work place should be equipped with a shower and an eye rinsing apparatus.

SECTION 9: Physical and chemical properties**9.1 Information on basic physical and chemical properties**

Physical state:	liquid
Colour:	colourless, clear
Odour:	characteristic
Boiling temperature / boiling range:	209 °C
Melting point / melting range:	-55,4 °C
Flash point / flash point range:	99 °C
Autoflammability:	> 400 °C
Density:	at 20 °C: 1,09 g/mL
Solubility:	soluble in various organic solvents
Water solubility:	insoluble
Partition coefficient n-octanol /water:	
Viscosity, dynamic:	at 25 °C: 2,5 mPa*s

9.2 Other information

No data available

SECTION 10: Stability and reactivity**10.1 Reactivity**

No data available

10.2 Chemical stability

Product is stable under normal storage conditions.

10.3 Possibility of hazardous reactions

No hazardous reactions known.

10.4 Conditions to avoid

Keep away from heat.

10.5 Incompatible materials

strong acids and alkalis, oxidizing agents

10.6 Hazardous decomposition products

Emits toxic fumes under fire conditions.

SECTION 11: Toxicological information**11.1 Information on toxicological effects**

Acute toxicity:

LD50 Rat, oral:	5000 mg/kg
LC50 Rat, inhalative:	11000 mg/m³
LD50 Rat, dermal:	2000 mg/kg

After inhalation: May cause irritations.

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After eye contact: May cause irritations.

General remarksNOAEL Rat, oral: 980 mg/kg bw/d
NOAEL Rat, dermal: 1000 mg/kg bw/d
NOAEC Rat, inhalative: 50 mg/m³
Not known to cause sensitization.
Mutagenicity: negative**SECTION 12: Ecological information****12.1 Toxicity**Aquatic toxicity: Algae toxicity: EC50 algae: 85 mg/L/ 72 h.
Daphnia toxicity: LC50 Daphnia magna: 112 - 150 ppm/ 24 h.
Fish toxicity: LC50 Pimephales promelas: 18 - 24 ppm/ 96 h.
Water Hazard Class: 1 = slightly hazardous to water**12.2. Persistence and degradability**

Further details: No data available

12.3 Bioaccumulative potential

Partition coefficient n-octanol /water:

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

No data available

12.6 Other adverse effects

General information: Do not allow to enter into ground-water, surface water or drains.

SECTION 13: Disposal considerations**13.1 Waste treatment methods****Product**Waste key number 07 07 99 = Wastes from the MFSU of fine chemicals and chemical products not otherwise specified
MFSU = manufacture, formulation, supply and use

Recommendation: Incinerate according to applicable local, state and federal regulations.

Contaminated packagingRecommendation: Dispose of waste according to applicable legislation.
Non-contaminated packages may be recycled.**SECTION 14: Transport information****14.1 UN number**

not applicable

14.2 UN proper shipping name

ADR/RID, IMDG, IATA: Not restricted

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14.3 Transport hazard class(es)

not applicable

14.4 Packing group

not applicable

14.5 Environmental hazards

Marine Pollutant unknown

14.6 Special precautions for user

No dangerous good in sense of these transport regulations.

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

No data available

SECTION 15: Regulatory information
15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
National regulations - Great Britain

Hazchem-Code: -

National regulations - Germany

Storage class: 10 = Combustible liquids, unless storage class 3

Water Hazard Class: 1 = slightly hazardous to water

Informations on working limitations:

Observe employment restrictions concerning young persons.

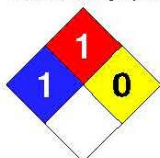
National regulations - EC member states

Volatile organic compounds (VOC):

100 % by weight = 1090 g/L

National regulations - USA

Hazard rating systems



NFPA Hazard Rating:

Health: 1 (Slight)

Fire: 1 (Slight)

Reactivity: 0 (Minimal)

HMIS Version III Rating:

Health: 1 (Slight)

Flammability: 1 (Slight)

Physical Hazard: 0 (Minimal)

Personal Protection: X = Consult your supervisor

HEALTH	1
FLAMMABILITY	1
PHYSICAL HAZARD	0
	X

15.2 Chemical Safety Assessment

For this substance a chemical safety assessment has been carried out.

SECTION 16: Other information
Further remarks

Literature: REACH Registration Dossier 'Reaction mass of dimethyl adipate and dimethyl glutarate and dimethyl succinate'.

Group that issues data sheet

Contact person: see chapter 1, department responsible for information.



EU SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 and Regulation (EU) No 453/2010 (REACH)

Date of print: 29.07.2011
Revision date: 27.07.2011
Date of first version: 27.07.2011

Dibasic Esters (DBE)

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The information in this data sheet has been established to our best knowledge and was up-to-date at time of revision. It does not represent a guarantee for the properties of the product described in terms of the legal warranty regulations.

MATERIAL SAFETY DATA SHEET**Product Name: FUMARIC ACID**

Revision Date: 01.10.2014

Page 1 of 4

1. Manufacturer and Substance Identification

Thirumalai chemicals Limited,
25 - A SIPCOT Industrial Complex,
Ranipet. 632 403. Tamil nadu, India.
Ph : + 91-04172-244441/2/6
Fax : + 91-04172-244308.
E-mail : exports@thirumalaichemicals.com

Chemical Name : Fumaric Acid
Molecular Formula : $C_4H_4O_4$
Molecular Weight : 116.07
Synonyms : Trans-2-butenedioic acid , (E)-Butenedioic acid , 2-butenedioic acid

2. Composition /Information on ingredients

<u>Chemical Name</u>	<u>CAS No.</u>	<u>Content (W/W)</u>	<u>EINECS</u>
Fumaric acid	110-17-8	More than 99.5 %	203-743-0
Maleic Acid	110-16-7	Less than 0.05 %	203-742-5

3. Hazard Identification

Hazard Symbol : Xi - Irritant
R-Phrases : R36
S-Phrases : S2, S26

4. First Aid Measures

If inhaled : Remove the affected individual to fresh air and medical attention required.

If on skin : Remove contaminated clothing. Wash affected areas thoroughly with soap and water. If irritation develops, seek medical attention.

If in eye : In case of contact with the eyes, rinse immediately for at least 15 minutes with plenty of water. Immediate medical attention required.

MATERIAL SAFETY DATA SHEET

Product Name: FUMARIC ACID

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5. Fire Fighting Measures

- Explosive Hazard : This material may form flammable dust-air mixtures when finely divided. Prevent dust build-up by providing adequate ventilation.
- Means of Extinction : Water, carbon dioxide, dry chemicals, wear self-contained breathing apparatus.
- Hazardous Combustion Products: Toxic fumes of carbon monoxide, carbon dioxide.
- Protection of Firefighters : Should wear proper protective equipment and self-contained breathing apparatus.

6. Accidental Release Measures

- Personal precautions : Avoid Inhalation. Use personal protective equipment. Ensure adequate ventilation.
- Environmental precautions : Remove all sources of ignition. Avoid discharge into environment
- Methods for cleaning up : Use mechanical handling equipment. Avoid raising dust. Flush with plenty of water. Dispose of in compliance with local and national regulations.

7. Handling and Storage

Handling

- General advice : Ensure thorough ventilation of stores and work areas. Take precautionary measures against static discharges. Keep away from sources of ignition - No smoking
- Protection against fire and explosion : Avoid dust formation. Dust can form an explosive mixture with air. Prevent electrostatic charge - sources of ignition should be kept well clear - fire extinguishers should be kept handy. Electrical devices must meet the specified temperature class.

Storage

- General advice : Protect against moisture. Containers should be stored tightly sealed in a dry place.

8. Exposure Controls / Personal Protection

National Occupational exposure limits: None assigned

- Engineering measures : Ensure adequate ventilation, Well grounded protected electrical equipment.
- Respiratory : Self contained breathing apparatus
- Eye : Closely fitted Safety goggles.
- Hand : Impervious Gloves
- Skin and body : Approved work boots, protective clothing

MATERIAL SAFETY DATA SHEET

Product Name: FUMARIC ACID

Revision Date: 01.10.2014

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Hygiene measure : Wash hands during break and at the end of the work

Other devices : Maintain eye wash facility in work area

9. Physical and Chemical Properties

Form : Power
Odour : odorless
Colour : White
Melting Point ° C : 287
Boiling Point ° C : 290 (sublimes)
Vapor Pressure mm Hg at 25° C : 1.54×10^{-4}
Water Solubility g/l at 25° C : 7
Density g/cm³ at 25° C : 1.635

10. Stability and Reactivity

Stability : Stable at normal temperatures.

Conditions to Avoid : Temperatures over 190° C and moisture.

Materials to Avoid : Strong oxidants, strong bases, alkali metals, amines, and carbonates.

Hazardous Decomposition Products: Maleic Acid, Maleic Anhydride, Carbon Monoxide, and Carbon Dioxide.

11. Toxicological Information

Acute toxicity (lethal doses)
(Literature value)

LD50/oral/ rat : 9.3 g/kg

LD50/oral/ rat : 1.0 g/kg

LD50/dermal/mouse : >20 g/kg

12. Ecological Information

Biodegradation:

Toxicity in water : water hazard class 1 (slightly hazardous for water)

LC50 (zebra fish) : 245 mg/l(48-h)

EC50 (green algae) : 41 mg/l(72-h)

MATERIAL SAFETY DATA SHEET**Product Name: FUMARIC ACID**

Revision Date: 01.10.2014

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13. Disposal Consideration

Disposal method

Product : To be performed as per local regulations.

Contaminated packaging : Can be land filled or incinerated, in compliance with local Regulations

14. Transport InformationRoad transport ADR/RIDMaritime transport IMDG
regulationsAir transport ICAO/IATA

} Not Classified as a dangerous good under transport

15. Regulatory Information

INTERNATIONAL REGULATIONS

Listed in EC : 297

Brussels Nomenclature : 2917.19

U.S. Food and Drug Administration : 21 CFR 172.350

Responsibility of the receiver to have the knowledge of the local and national regulations.

16. Other Information

The information provided in this Safety Data Sheet is given in good faith and is correct to the best of our knowledge and information at the date of publication. It is designed only as guidance for safe handling, storage, transportation, use and disposal. No warranty is expressed or implied.

Contact Person : B.K. Bama

Company : Thirumalai Chemicals Limited
25A Sipcot Industrial Complex
Ranipet 632 403, Tamil Nadu, India

Phone number : + 91 - 04172 - 244441 / 244442 / 244446

Fax number : + 91 - 04172 - 244308

E-Mail : bama.bk@thirumalaichemicals.com



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600 Stewart Street
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Seattle, WA. 98101
Phone: 206-505-3500

SAFETY DATA SHEET

THE DOW CHEMICAL COMPANY

Product name: DOWANOL™ DPM Glycol Ether

Issue Date: 03/08/2016
Print Date: 05/18/2017

THE DOW CHEMICAL COMPANY encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. IDENTIFICATION

Product name: DOWANOL™ DPM Glycol Ether

Recommended use of the chemical and restrictions on use

Identified uses: Industrial solvent for cleaner and coating formulations.

COMPANY IDENTIFICATION

THE DOW CHEMICAL COMPANY
2030 WILLARD H DOW CENTER
MIDLAND MI 48674-0000
UNITED STATES

Customer Information Number:

800-258-2436
SDSQuestion@dow.com

EMERGENCY TELEPHONE NUMBER

24-Hour Emergency Contact: CHEMTREC +1 800-424-9300

Local Emergency Contact: 800-424-9300

2. HAZARDS IDENTIFICATION

Hazard classification

This material is hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29CFR 1910.1200.

Flammable liquids - Category 4

Label elements

Signal word: **WARNING!**

Hazards

Combustible liquid.

Precautionary statements

Prevention

Keep away from heat/sparks/open flames/hot surfaces. No smoking.
Wear protective gloves/ eye protection/ face protection.

Response

In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.

Storage

Store in a well-ventilated place. Keep cool.

Disposal

Dispose of contents/ container to an approved waste disposal plant.

Other hazards

No data available

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms: (2-methoxymethylethoxy)propanol

This product is a substance.

Component	CASRN	Concentration
Dipropylene glycol monomethyl ether	34590-94-8	> 99.0 %

4. FIRST AID MEASURES

Description of first aid measures

General advice: First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

Inhalation: Move person to fresh air. If not breathing, give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask, etc). If breathing is difficult, oxygen should be administered by qualified personnel. Call a physician or transport to a medical facility.

Skin contact: Wash off with plenty of water.

Eye contact: Flush eyes thoroughly with water for several minutes. Remove contact lenses after the initial 1-2 minutes and continue flushing for several additional minutes. If effects occur, consult a physician, preferably an ophthalmologist.

Ingestion: No emergency medical treatment necessary.

Most important symptoms and effects, both acute and delayed: Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

Indication of any immediate medical attention and special treatment needed

Notes to physician: Maintain adequate ventilation and oxygenation of the patient. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

5. FIREFIGHTING MEASURES

Suitable extinguishing media: Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective.

Unsuitable extinguishing media: No data available

Special hazards arising from the substance or mixture

Hazardous combustion products: During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Carbon monoxide. Carbon dioxide.

Unusual Fire and Explosion Hazards: Container may rupture from gas generation in a fire situation. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids.

Advice for firefighters

Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. Burning liquids may be extinguished by dilution with water. Do not use direct water stream. May spread fire. Move container from fire area if this is possible without hazard. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage.

Special protective equipment for firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Isolate area. Refer to section 7, Handling, for additional precautionary measures. Keep unnecessary and unprotected personnel from entering the area. Keep upwind of spill. Ventilate area of leak or spill. No smoking in area. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Environmental precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

Methods and materials for containment and cleaning up: Small spills: Absorb with materials such as: Sand. Vermiculite. Collect in suitable and properly labeled containers. Large spills: Contain spilled material if possible. Pump into suitable and properly labeled containers. See Section 13, Disposal Considerations, for additional information.

7. HANDLING AND STORAGE

Precautions for safe handling: Keep away from heat, sparks and flame. Containers, even those that have been emptied, can contain vapors. Do not cut, drill, grind, weld, or perform similar operations on or near empty containers. Avoid breathing vapor. Use with adequate ventilation. Keep container closed. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

Spills of these organic materials on hot fibrous insulations may lead to lowering of the autoignition temperatures possibly resulting in spontaneous combustion.

Conditions for safe storage: Store in the following material(s): Carbon steel. Stainless steel. Phenolic lined steel drums. Do not store in: Aluminum. Copper. Galvanized iron. Galvanized steel. See Section 10 for more specific information.

Storage stability

Shelf life: Use within, Steel drums. 24 Month

Bulk 6 Month

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure limits are listed below, if they exist.

Component	Regulation	Type of listing	Value/Notation
Dipropylene glycol monomethyl ether	Dow IHG	TWA	10 ppm
	Dow IHG	TWA	SKIN
	Dow IHG	STEL	30 ppm
	Dow IHG	STEL	SKIN
	ACGIH	TWA	100 ppm
	ACGIH	STEL	150 ppm
	ACGIH	TWA	SKIN
	OSHA Z-1	TWA	600 mg/m3 100 ppm
	ACGIH	STEL	SKIN
	OSHA Z-1	TWA	SKIN

Exposure controls

Engineering controls: Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

Individual protection measures

Eye/face protection: Use safety glasses (with side shields).

Skin protection

Hand protection: Use gloves chemically resistant to this material when prolonged or frequently repeated contact could occur. Examples of preferred glove barrier materials include: Butyl rubber. Ethyl vinyl alcohol laminate ("EVAL"). Examples of acceptable glove barrier materials include: Natural rubber ("latex"). Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyvinyl chloride ("PVC" or "vinyl"). NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements

(cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Other protection: When prolonged or frequently repeated contact could occur, use protective clothing chemically resistant to this material. Selection of specific items such as faceshield, boots, apron, or full-body suit will depend on the task.

Respiratory protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. For most conditions no respiratory protection should be needed; however, if discomfort is experienced, use an approved air-purifying respirator.

The following should be effective types of air-purifying respirators: Organic vapor cartridge.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	
Physical state	Liquid.
Color	Colorless
Odor	Mild
Odor Threshold	No test data available
pH	Not applicable
Melting point/range	Not available
Freezing point	-83 °C (-117 °F) <i>Literature</i>
Boiling point (760 mmHg)	189.6 °C (373.3 °F) at 760 mmHg <i>Literature</i>
Flash point	closed cup 75 °C (167 °F) <i>Setaflash Closed Cup ASTM D3828</i>
Evaporation Rate (Butyl Acetate = 1)	No test data available
Flammability (solid, gas)	Not applicable to liquids
Lower explosion limit	1.1 % vol <i>Setaflash Closed Cup ASTM D3828</i>
Upper explosion limit	14 % vol <i>Setaflash Closed Cup ASTM D3828</i>
Vapor Pressure	10 mmHg at 75.1 °C (167.2 °F) <i>Literature</i>
Relative Vapor Density (air = 1)	5.11 at 20 °C (68 °F) <i>Literature</i>
Relative Density (water = 1)	0.951 at 25 °C (77 °F) / 25 °C <i>Literature</i>
Water solubility	100 % at 25 °C (77 °F) <i>Literature</i>
Partition coefficient: n-octanol/water	log Pow: 1.01 <i>Measured</i>
Auto-ignition temperature	207 °C (405 °F) <i>Literature</i>
Decomposition temperature	No test data available
Dynamic Viscosity	3.7 mPa.s at 25 °C (77 °F) <i>Literature</i>
Kinematic Viscosity	4.55 mm ² /s at 20 °C (68 °F) <i>Literature</i>
Explosive properties	Not explosive
Oxidizing properties	No
Molecular weight	148.2 g/mol <i>Literature</i>

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

Reactivity: No data available

Chemical stability: Stable under recommended storage conditions. See Storage, Section 7.

Possibility of hazardous reactions: Polymerization will not occur.

Conditions to avoid: Do not distill to dryness. Product can oxidize at elevated temperatures. Generation of gas during decomposition can cause pressure in closed systems.

Incompatible materials: Avoid contact with: Strong acids. Strong bases. Strong oxidizers.

Hazardous decomposition products: Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Aldehydes. Ketones. Organic acids.

11. TOXICOLOGICAL INFORMATION

Toxicological information appears in this section when such data is available.

Acute toxicity

Acute oral toxicity

Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts.

LD50, Rat, > 5,000 mg/kg

Acute dermal toxicity

Prolonged skin contact is unlikely to result in absorption of harmful amounts. Prolonged skin contact with very large amounts may cause dizziness or drowsiness.

LD50, Rabbit, 9,510 mg/kg

Acute inhalation toxicity

Excessive exposure may cause irritation to upper respiratory tract (nose and throat). Symptoms of excessive exposure may be anesthetic or narcotic effects; dizziness and drowsiness may be observed.

LC50, Rat, 7 Hour, vapour, 3.35 mg/l No deaths occurred at this concentration.

Skin corrosion/irritation

Prolonged exposure not likely to cause significant skin irritation.

Serious eye damage/eye irritation

May cause slight temporary eye irritation.
Corneal injury is unlikely.

Sensitization

Did not cause allergic skin reactions when tested in humans.

For respiratory sensitization:

No relevant data found.

Specific Target Organ Systemic Toxicity (Single Exposure)

Evaluation of available data suggests that this material is not an STOT-SE toxicant.

Specific Target Organ Systemic Toxicity (Repeated Exposure)

Symptoms of excessive exposure may be anesthetic or narcotic effects; dizziness and drowsiness may be observed.

Carcinogenicity

For similar material(s): Did not cause cancer in laboratory animals.

Teratogenicity

Did not cause birth defects or any other fetal effects in laboratory animals.

Reproductive toxicity

For similar material(s): In laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals.

Mutagenicity

In vitro genetic toxicity studies were negative.

Aspiration Hazard

Based on physical properties, not likely to be an aspiration hazard.

12. ECOLOGICAL INFORMATION

Ecotoxicological information appears in this section when such data is available.

Toxicity**Acute toxicity to fish**

Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).

LC50, *Poecilia reticulata* (guppy), static test, 96 Hour, > 1,000 mg/l, OECD Test Guideline 203 or Equivalent

Acute toxicity to aquatic invertebrates

LC50, *Daphnia magna* (Water flea), static test, 48 Hour, 1,919 mg/l, OECD Test Guideline 202 or Equivalent

LC50, *Crangon crangon* (shrimp), semi-static test, 96 Hour, > 1,000 mg/l, OECD Test Guideline 202 or Equivalent

LC50, copepod *Acartia tonsa*, static test, 48 Hour, 2,070 mg/l, ISO TC147/SC5/WG2

Acute toxicity to algae/aquatic plants

ErC50, Pseudokirchneriella subcapitata (green algae), static test, 96 Hour, Biomass, > 969 mg/l, OECD Test Guideline 201 or Equivalent

Toxicity to bacteria

EC10, Pseudomonas putida, 18 Hour, 4,168 mg/l

Chronic aquatic toxicity**Chronic toxicity to aquatic invertebrates**

NOEC, Daphnia magna (Water flea), flow-through test, 22 d, > 0.5 mg/l

LOEC, Daphnia magna (Water flea), flow-through test, 22 d, > 0.5 mg/l

MATC (Maximum Acceptable Toxicant Level), Daphnia magna (Water flea), flow-through test, 22 d, > 0.5 mg/l

Persistence and degradability

Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability. Material is ultimately biodegradable (reaches > 70% mineralization in OECD test(s) for inherent biodegradability).

10-day Window: Pass

Biodegradation: 75 %

Exposure time: 28 d

Method: OECD Test Guideline 301F or Equivalent

Theoretical Oxygen Demand: 2.06 mg/mg

Chemical Oxygen Demand: 2.02 mg/mg Dichromate

Biological oxygen demand (BOD)

Incubation Time	BOD
5 d	0 %
10 d	0 %
20 d	31.6 %

Photodegradation

Test Type: Half-life (indirect photolysis)

Sensitizer: OH radicals

Atmospheric half-life: 3.4 - 10.4 Hour

Method: Estimated.

Bioaccumulative potential

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Partition coefficient: n-octanol/water(log Pow): 1.01 Measured

Mobility in soil

Given its very low Henry's constant, volatilization from natural bodies of water or moist soil is not expected to be an important fate process.

Potential for mobility in soil is very high (Koc between 0 and 50).

Partition coefficient(Koc): 0.28 Estimated.

13. DISPOSAL CONSIDERATIONS

Disposal methods: DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. All disposal practices must be in compliance with all Federal, State/Provincial and local laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator. AS YOUR SUPPLIER, WE HAVE NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN MSDS SECTION: Composition Information. FOR UNUSED & UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted: Incinerator or other thermal destruction device.

14. TRANSPORT INFORMATION

DOT

Proper shipping name	Combustible liquid, n.o.s.(DIPROPYLENE GLYCOL METHYL ETHER ISOMERS)
UN number	NA 1993
Class	CBL
Packing group	III

Classification for SEA transport (IMO-IMDG):

Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code	Not regulated for transport Consult IMO regulations before transporting ocean bulk
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Classification for AIR transport (IATA/ICAO):

Not regulated for transport

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

15. REGULATORY INFORMATION

OSHA Hazard Communication Standard

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312

Fire Hazard

Acute Health Hazard

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313

This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Pennsylvania Worker and Community Right-To-Know Act:

The following chemicals are listed because of the additional requirements of Pennsylvania law:

Components

Dipropylene glycol monomethyl ether

CASRN

34590-94-8

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)

This product contains no listed substances known to the State of California to cause cancer, birth defects or other reproductive harm, at levels which would require a warning under the statute.

United States TSCA Inventory (TSCA)

All components of this product are in compliance with the inventory listing requirements of the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

16. OTHER INFORMATION

Product Literature

Additional information on this product may be obtained by calling your sales or customer service contact.

Hazard Rating System**NFPA**

Health	Fire	Reactivity
1	2	0

Revision

Identification Number: 101201613 / A001 / Issue Date: 03/08/2016 / Version: 8.0

Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Legend

ACGIH	USA. ACGIH Threshold Limit Values (TLV)
Dow IHG	Dow Industrial Hygiene Guideline
OSHA Z-1	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
SKIN	Absorbed via skin
STEL	Short term exposure limit
TWA	Time weighted average

Information Source and References

This SDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company.

THE DOW CHEMICAL COMPANY urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.



SAFETY DATA SHEET

THE DOW CHEMICAL COMPANY

Product name: UCAR TM SOLVENT DB

Issue Date: 12/14/2015

Print Date: 06/16/2016

THE DOW CHEMICAL COMPANY encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. IDENTIFICATION

Product name: UCAR TM SOLVENT DB

Recommended use of the chemical and restrictions on use

Identified uses: Industrial solvent. We recommend that you use this product in a manner consistent with the listed use. If your intended use is not consistent with the stated use, please contact your sales or technical service representative.

COMPANY IDENTIFICATION

THE DOW CHEMICAL COMPANY
2030 WILLARD H DOW CENTER
MIDLAND MI 48674-0000
UNITED STATES

Customer Information Number:

800-258-2436
SDSQuestion@dow.com

EMERGENCY TELEPHONE NUMBER

24-Hour Emergency Contact: CHEMTREC +1 800-424-9300

Local Emergency Contact: 800-424-9300

2. HAZARDS IDENTIFICATION

Hazard classification

This material is hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29CFR 1910.1200.

Eye irritation - Category 2A

Label elements

Hazard pictograms



Signal word: **WARNING!**

Hazards

Causes serious eye irritation.

Precautionary statements**Prevention**

Wash skin thoroughly after handling.

Wear eye protection/ face protection.

Response

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

If eye irritation persists: Get medical advice/ attention.

Other hazards

No data available

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms: Diethylene glycol monobutyl ether

This product is a substance.

Component	CASRN	Concentration
Diethylene glycol monobutyl ether	112-34-5	>= 99.0 - <= 100.0 %

4. FIRST AID MEASURES

Description of first aid measures

General advice: First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

Inhalation: Move person to fresh air; if effects occur, consult a physician.

Skin contact: Wash off with plenty of water.

Eye contact: Immediately flush eyes with water; remove contact lenses, if present, after the first 5 minutes, then continue flushing eyes for at least 15 minutes. Obtain medical attention without delay, preferably from an ophthalmologist. Suitable emergency eye wash facility should be immediately available.

Ingestion: If swallowed, seek medical attention. Do not induce vomiting unless directed to do so by medical personnel.

Most important symptoms and effects, both acute and delayed: Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

Indication of any immediate medical attention and special treatment needed

Notes to physician: No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

5. FIREFIGHTING MEASURES

Suitable extinguishing media: Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective.

Unsuitable extinguishing media: No information currently available.

Special hazards arising from the substance or mixture

Hazardous combustion products: Carbon monoxide. Carbon dioxide. During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Carbon monoxide. Carbon dioxide.

Unusual Fire and Explosion Hazards: Container may rupture from gas generation in a fire situation. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids.

Advice for firefighters

Fire Fighting Procedures: Do not use direct water stream. Warning! Carefully consider effects of adding water to this material. Contact with water results in immediate and violent boiling and frothing. Keep people away. Isolate fire and deny unnecessary entry. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. Burning liquids may be extinguished by dilution with water. Do not use direct water stream. May spread fire. Move container from fire area if this is possible without hazard. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage.

Special protective equipment for firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). If protective equipment is not available or not used, fight fire from a protected location or safe distance.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Isolate area. Keep unnecessary and unprotected personnel from entering the area. Refer to section 7, Handling, for additional precautionary measures. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Environmental precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

Methods and materials for containment and cleaning up: Small spills: Absorb with materials such as: Sand. Vermiculite. Collect in suitable and properly labeled containers. Large spills: Contain spilled material if possible. Pump into suitable and properly labeled containers. See Section 13, Disposal Considerations, for additional information.

7. HANDLING AND STORAGE

Precautions for safe handling: Do not get in eyes. Keep container closed. Use with adequate ventilation. Wash thoroughly after handling.

Avoid contact with eyes. Wash thoroughly after handling. Keep container closed. Use with adequate ventilation. Spills of these organic materials on hot fibrous insulations may lead to lowering of the autoignition temperatures possibly resulting in spontaneous combustion. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

Conditions for safe storage: Store in the following material(s): Carbon steel. Stainless steel. Phenolic lined steel drums. Do not store in: Aluminum. Copper. Galvanized iron. Galvanized steel. See Section 10 for more specific information.

Storage stability

Storage Period:

Bulk

6 Month

Metal drums.

24 Month

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure limits are listed below, if they exist.

Component	Regulation	Type of listing	Value/Notation
Diethylene glycol monobutyl ether	Dow IHG	TWA	35 ppm
	ACGIH	TWA Inhalable fraction and vapor	10 ppm

Exposure controls

Engineering controls: Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

Individual protection measures

Eye/face protection: Use chemical goggles.

Skin protection

Hand protection: Use gloves chemically resistant to this material when prolonged or frequently repeated contact could occur. Examples of preferred glove barrier materials include: Butyl rubber. Polyethylene. Chlorinated polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Examples of acceptable glove barrier materials include: Viton. Natural rubber ("latex"). Polyvinyl chloride ("PVC" or "vinyl"). Nitrile/butadiene rubber ("nitrile" or "NBR"). NOTICE: The selection of a specific glove for a particular

application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Other protection: Wear clean, body-covering clothing.

Respiratory protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. For most conditions no respiratory protection should be needed; however, if discomfort is experienced, use an approved air-purifying respirator.

The following should be effective types of air-purifying respirators: Organic vapor cartridge.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	
Physical state	Liquid.
Color	Colorless
Odor	Faint
Odor Threshold	No test data available
pH	No test data available
Melting point/range	Not applicable to liquids
Freezing point	-68 °C (-90 °F) <i>Literature</i>
Boiling point (760 mmHg)	230.6 °C (447.1 °F) <i>Literature</i>
Flash point	closed cup 114 °C (237 °F) <i>Literature</i>
Evaporation Rate (Butyl Acetate = 1)	0.01 <i>Literature</i>
Flammability (solid, gas)	Not Applicable
Lower explosion limit	0.85 % vol <i>Literature</i>
Upper explosion limit	24.6 % vol <i>Literature</i>
Vapor Pressure	0.021 mmHg at 25 °C (77 °F) <i>Literature</i>
Relative Vapor Density (air = 1)	No test data available
Relative Density (water = 1)	0.951 at 20 °C (68 °F) / 20 °C <i>Literature</i>
Water solubility	100 % at 20 °C (68 °F) <i>Literature</i> completely miscible with water
Partition coefficient: n-octanol/water	log Pow: 1 <i>Measured</i>
Auto-ignition temperature	210 °C (410 °F) <i>Literature</i>
Decomposition temperature	No test data available No test data available
Dynamic Viscosity	6 mPa.s at 20 °C (68 °F) <i>Literature</i>
Kinematic Viscosity	5.2 cSt at 25 °C (77 °F) <i>Literature</i>
Explosive properties	No data available
Oxidizing properties	No data available
Liquid Density	0.955 g/cm ³ at 20 °C (68 °F) <i>Measured</i>
Molecular weight	162.2 g/mol <i>Calculated.</i>

Molecular formula	CH ₃ CH ₂ CH ₂ CH ₂ O (CH ₂ CH ₂ O) 2H
Percent volatility	<i>Not reported</i> No test data available
Saturated vapour concentration	<i>Not reported</i> No test data available
Volatile Organic Compounds	952 g/L <i>Literature</i>

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

Reactivity: No dangerous reaction known under conditions of normal use.

Chemical stability: Stable. Thermally stable at typical use temperatures.

Possibility of hazardous reactions: Polymerization will not occur.

Conditions to avoid: Do not distill to dryness. Product can oxidize at elevated temperatures. Generation of gas during decomposition can cause pressure in closed systems.

Incompatible materials: Strong oxidizers. Avoid contact with: Strong bases. Avoid contact with: Strong acids. Strong bases. Strong oxidizers.

Hazardous decomposition products: Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Aldehydes. Ketones. Organic acids.

11. TOXICOLOGICAL INFORMATION

Toxicological information appears in this section when such data is available.

Acute toxicity

Acute oral toxicity

Low toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury.

LD₅₀, Mouse, 2,410 mg/kg

LD₅₀, Rat, 3,305 mg/kg

Acute dermal toxicity

Prolonged skin contact is unlikely to result in absorption of harmful amounts.

LD₅₀, Rabbit, 2,764 mg/kg

Acute inhalation toxicity

No adverse effects are anticipated from single exposure to vapor. For respiratory irritation and narcotic effects: No relevant data found.

As product: The LC₅₀ has not been determined.

Skin corrosion/irritation

Prolonged contact may cause slight skin irritation with local redness.

Serious eye damage/eye irritation

May cause severe eye irritation.

May cause slight corneal injury.

Sensitization

Did not cause allergic skin reactions when tested in guinea pigs.

For respiratory sensitization:

No relevant data found.

Specific Target Organ Systemic Toxicity (Single Exposure)

Available data are inadequate to determine single exposure specific target organ toxicity.

Specific Target Organ Systemic Toxicity (Repeated Exposure)

In animals, effects have been reported on the following organs:

Blood.

Kidney.

Liver.

Carcinogenicity

No relevant data found.

Teratogenicity

Did not cause birth defects or other effects in the fetus even at doses which caused toxic effects in the mother.

Reproductive toxicity

In animal studies, did not interfere with reproduction. However, body weights of newborn animals were decreased.

Mutagenicity

In vitro genetic toxicity studies were predominantly negative. Animal genetic toxicity studies were negative.

Aspiration Hazard

Based on physical properties, not likely to be an aspiration hazard.

COMPONENTS INFLUENCING TOXICOLOGY:

Diethylene glycol monobutyl ether

Acute inhalation toxicity

No adverse effects are anticipated from single exposure to vapor. For respiratory irritation and narcotic effects: No relevant data found.

As product: The LC50 has not been determined.

12. ECOLOGICAL INFORMATION

Ecotoxicological information appears in this section when such data is available.

Toxicity

Acute toxicity to fish

Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).

LC50, *Lepomis macrochirus* (Bluegill sunfish), static test, 96 Hour, 1,300 mg/l, OECD Test Guideline 203 or Equivalent

Acute toxicity to aquatic invertebrates

EC50, *Daphnia magna* (Water flea), static test, 48 Hour, > 100 mg/l, OECD Test Guideline 202 or Equivalent

Acute toxicity to algae/aquatic plants

ErC50, alga *Scenedesmus* sp., static test, 96 Hour, Growth rate inhibition, > 100 mg/l, OECD Test Guideline 201 or Equivalent

ErC50, alga *Scenedesmus* sp., static test, 96 Hour, Biomass, > 100 mg/l, OECD Test Guideline 201 or Equivalent

Toxicity to bacteria

EC50, Bacteria, static test, 255 mg/l

Persistence and degradability

Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.

10-day Window: Not applicable

Biodegradation: 89 - 93 %

Exposure time: 28 d

Method: OECD Test Guideline 301C or Equivalent

10-day Window: Not applicable

Biodegradation: 100 %

Exposure time: 28 d

Method: OECD Test Guideline 302B or Equivalent

Theoretical Oxygen Demand: 2.17 mg/mg

Biological oxygen demand (BOD)

Incubation Time	BOD
5 d	27 %
10 d	60 %
20 d	81 %

Photodegradation

Test Type: Half-life (indirect photolysis)

Sensitizer: OH radicals

Atmospheric half-life: 11 Hour

Method: Estimated.

Bioaccumulative potential

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Partition coefficient: n-octanol/water(log Pow): 1 Measured

Mobility in soil

Given its very low Henry's constant, volatilization from natural bodies of water or moist soil is not expected to be an important fate process.

Potential for mobility in soil is very high (Koc between 0 and 50).

Partition coefficient(Koc): 2 Estimated.

13. DISPOSAL CONSIDERATIONS

Disposal methods: DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. All disposal practices must be in compliance with all Federal, State/Provincial and local laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator. AS YOUR SUPPLIER, WE HAVE NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN MSDS SECTION: Composition Information. FOR UNUSED & UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted: Incinerator or other thermal destruction device.

14. TRANSPORT INFORMATION

DOT

Not regulated for transport

Classification for SEA transport (IMO-IMDG):

Not regulated for transport

**Transport in bulk
according to Annex I or II
of MARPOL 73/78 and the
IBC or IGC Code**

Consult IMO regulations before transporting ocean bulk

Classification for AIR transport (IATA/ICAO):

Not regulated for transport

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

15. REGULATORY INFORMATION

OSHA Hazard Communication Standard

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312

Acute Health Hazard

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313

This product contains the following substances which are subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and which are listed in 40 CFR 372.

Components

Diethylene glycol monobutyl ether

CASRN

112-34-5

Pennsylvania Worker and Community Right-To-Know Act:

To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)

This product contains no listed substances known to the State of California to cause cancer, birth defects or other reproductive harm, at levels which would require a warning under the statute.

United States TSCA Inventory (TSCA)

All components of this product are in compliance with the inventory listing requirements of the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

16. OTHER INFORMATION

Hazard Rating System

NFPA

Health	Fire	Reactivity
2	1	0

Revision

Identification Number: 101234591 / A001 / Issue Date: 12/14/2015 / Version: 3.0

Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Legend

ACGIH	USA. ACGIH Threshold Limit Values (TLV)
Dow IHG	Dow Industrial Hygiene Guideline

TWA	8-hour, time-weighted average
-----	-------------------------------

Information Source and References

This SDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company.

THE DOW CHEMICAL COMPANY urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.

SECTION 1. PRODUCT IDENTIFICATION

1.1 TRADE NAME (AS LABELED):**SYNONYMS:****CAS#:****1.2 PRODUCT USE:****1.3 MANUFACTURER'S NAME:****ADDRESS:****BUSINESS PHONE:****WEB SITE INFORMATION:****1.4 EMERGENCY PHONE NUMBERS:****DATE OF CURRENT REVISION:****DATE OF LAST REVISION:****POLYPHOSPHORIC ACID 108%-119%**

Phospholeum; Tetraphosphoric acid

8017-16-1

Refer to section 7.3

Innophos.

259 Prospect Plains Rd, Building A, Cranbury, NJ 08512

1-800-506-1146

www.innophos.com

800-424-9300 (CHEMTREC U.S. and Canada – 24 Hrs)

+1 703-527-3887 (CHEMTREC outside the USA and Canada – 24 Hrs)

615-386-7816 – Innophos Emergency Communication Team (ECT)

March 21, 2018

February 2, 2016

SECTION 2. HAZARD IDENTIFICATION

EMERGENCY OVERVIEW: This product is a colorless to yellow to brown liquid with no odor.**Health Hazards:** May cause severe skin burns and eye damage. May cause respiratory irritation.**Flammability Hazards:** This product is not flammable.**Reactivity Hazards:** Corrosive.**Environmental Hazards:** The environmental effects of this product have not been investigated, however release may cause long term adverse environmental effects.**2.1 EU LABELING AND CLASSIFICATION:**

This product does meet the definition of a hazardous substance or preparation as defined by 29 CFR 1910. 1200 AND the European Union Council Directives 67/548/EEC, 1999/45/EC, 1272/2008/EC and subsequent Directives.

EU HAZARD CLASSIFICATION OF INGREDIENTS PER DIRECTIVE 1272/2008/EC:**Index Number:****EC# 231-633-2 is listed in Annex VI: Index #015-011-00-6**

Substances not listed either individually or in group entries must be self-classified.

Component(s) Contributing to Classification(s)

Phosphoric Acid

2.2 LABEL ELEMENTS

US DOT SYMBOLS



CANADA (WHMIS) SYMBOL(S)

Complies with WHMIS 2015

EUROPEAN and (GHS) Hazard Symbol(s)

Signal Word: **Danger!****GHS Hazard Classification(s):**

Skin Corrosion Category 1B

Corrosive to Metals Category 1

Hazard Statement(s):

H314 Causes severe burns and eye damage

H290 May be corrosive to metals

Prevention Statement(s):

P234 Keep only in original container.

P260 Do not breathe dusts or mists.

P264 Wash thoroughly after handling.

P280 Wear protective gloves and eye/face protection.

Response Statement(s):

P390 Absorb spillage to prevent material damage.

P301+P330+P331 IF SWALLOWED: Rinse mouth. Do not induce vomiting.

P321 Specific treatment (see SDS Section 4 First-Aid Measures)

P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

P363 Wash contaminated clothing before reuse.

P310 Immediately call a POISON CENTER/doctor.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

Storage Statement(s):

P406 Store in corrosive resistant container with a resistant inner liner.

P405 Store locked up.

Disposal Statement(s):

P501 Dispose of contents/container in accordance with local/ regional/ national/ international regulations.

2.3 HEALTH HAZARDS OR RISKS FROM EXPOSURE:

SYMPTOMS OF OVEREXPOSURE BY ROUTE OF EXPOSURE: The most significant routes of overexposure for this product are by contact with eyes, and skin and respiratory system. The symptoms of overexposure are described in the following paragraphs.

ACUTE:

INHALATION: May cause upper respiratory tract irritation.

CONTACT WITH SKIN: Corrosive, exposure to skin may cause burns.

EYE CONTACT: Corrosive, will cause serious eye damage.

INGESTION: May cause burns to mouth and esophagus, abdominal pain, nausea, vomiting.

CHRONIC: May cause Bronchial irritation with chronic cough.

TARGET ORGANS: **Acute:** Skin, Eyes, and Respiratory System

Chronic: Respiratory System

SECTION 3. COMPOSITION AND INFORMATION ON INGREDIENTS

Hazardous Ingredients:	WT%	CAS#	EINECS #	Hazard Classification
Polyphosphoric Acid	>99%	8017-16-1	232-417-0	Skin Corr.1B, Corr. To Metals 1
Balance of other ingredients are non-hazardous or less than 1% in concentration (or 0.1% for carcinogens, reproductive toxins, or respiratory sensitizers).				

SECTION 4. FIRST-AID MEASURES**4.1 DESCRIPTION OF FIRST AID MEASURES:**

EYE CONTACT: If product enters the eyes, open eyes while under gentle running water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing for at least 15 minutes. Seek medical attention.

SKIN CONTACT: Wash skin thoroughly after handling. Seek medical attention if irritation develops and persists. Remove contaminated clothing. Launder before re-use.

INHALATION: If breathing becomes difficult, remove victim to fresh air. If necessary, use artificial respiration to support vital functions. Seek medical attention.

INGESTION: If product is swallowed, call physician or poison control center for most current information. If professional advice is not available, do not induce vomiting. Never induce vomiting or give diluents (milk or water) to someone who is unconscious, having convulsions, or who cannot swallow. Seek medical advice. Take a copy of the label and/or SDS with the victim to the health professional.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Pre-existing eye problems may be aggravated by prolonged contact.

4.2 SYMPTOMS AND EFFECTS, BOTH ACUTE AND DELAYED:

Contact with eyes and skin may cause burns. Inhalation may cause upper respiratory irritation.

4.3 RECOMMENDATIONS TO PHYSICIANS:

Treat symptoms and eliminate overexposure.

SECTION 5. FIRE-FIGHTING MEASURES

5.1 FIRE EXTINGUISHING MATERIALS:

Use fire extinguishing methods below:

<u>Water Spray:</u>	No	<u>Carbon Dioxide:</u>	Yes
<u>Foam:</u>	Yes	<u>Dry Chemical:</u>	Yes
<u>Halon:</u>	Yes	<u>Other:</u>	Any "A" Class

5.2 UNUSUAL FIRE AND EXPLOSION HAZARDS:

None expected

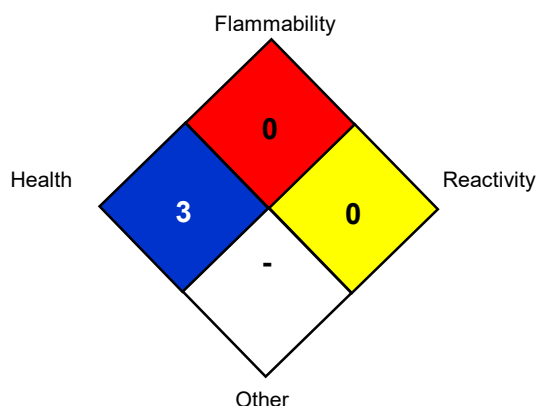
Explosion Sensitivity to Mechanical Impact: No

Explosion Sensitivity to Static Discharge: No



5.3 SPECIAL FIRE-FIGHTING PROCEDURES:

Incipient fire responders should wear eye protection. Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment. Isolate materials not yet involved in the fire and protect personnel. Move containers from fire area if this can be done without risk; otherwise, cool with carefully applied water spray. If possible, prevent runoff water from entering storm drains, bodies of water, or other environmentally sensitive areas.

NFPA RATING SYSTEM



HMIS RATING SYSTEM

HAZARDOUS MATERIAL IDENTIFICATION SYSTEM			
HEALTH HAZARD (BLUE)			3
FLAMMABILITY HAZARD (RED)			0
PHYSICAL HAZARD (YELLOW)			0
PROTECTIVE EQUIPMENT			
EYES	RESPIRATORY	HANDS	BODY
	See Sect 8		See Sect 8
For Routine Industrial Use and Handling Applications			

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe * = Chronic hazard

SECTION 6. ACCIDENTAL RELEASE MEASURES

6.1 PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES:

Avoid breathing mist / spray. Provide adequate ventilation. Wear suitable protective clothing, gloves and eye/face protection. Evacuate personnel to safe areas.

6.2 ENVIRONMENTAL PRECAUTIONS:

Not applicable.

6.3 SPILL AND LEAK RESPONSE:

Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Prevent entry into sewers, water courses, basement or confined areas. Avoid dust generation. Do not dry sweep. Vacuum dust with equipment fitted with a HEPA filter and place in a closed, labeled waste container. Avoid creating dusty conditions and prevent wind dispersal. Dispose of via a licensed waste disposal contractor.

SECTION 7. HANDLING and STORAGE

7.1 PRECAUTIONS FOR SAFE HANDLING:

To prevent skin and eye contact under the foreseeable conditions of use, wear appropriate protective clothing and safety eyewear. When handling, do not eat, drink, or smoke. Wash thoroughly after handling. Handle in a well-ventilated work area.

7.2 STORAGE AND HANDLING PRACTICES:

Keep away from incompatible materials. Eliminate all ignition sources. Keep in a dry, well-ventilated area in closed containers. Protect containers from physical damage. Keep container tightly closed and sealed until ready for use. Store in accordance with local regulations.

7.3 SPECIFIC USES:

Intended for use in the production of phosphates, phosphate esters and the polyphosphorylation of polyols. This material acts as a catalyst in organic reactions such as rearrangement, polymerization and dehydration. Also used to strengthen or fortify weak acids.

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION**8.1 EXPOSURE PARAMETERS:**

Chemical Name	CAS#	ACGIH TLV	OSHA TWA	EH40 TWA
Polyphosphoric Acid	8017-16-1	Not Listed	Not Listed	Not Listed

8.2 EXPOSURE CONTROLS:

VENTILATION AND ENGINEERING CONTROLS: Use with adequate ventilation to ensure exposure levels are maintained below the limits provided above.

The following information on appropriate Personal Protective Equipment is provided to assist employers in complying with OSHA regulations found in 29 CFR Subpart I (beginning at 1910.132) or equivalent standard of Canada, or standards of EU member states (including EN 149 for respiratory PPE, and EN 166 for face/eye protection), and those of Japan. Please reference applicable regulations and standards for relevant details.

RESPIRATORY PROTECTION: Not required for properly ventilated areas. Maintain airborne contaminant concentrations below guidelines listed above, if applicable. If necessary, use only respiratory protection authorized in the U.S. Federal OSHA Respiratory Protection Standard (29 CFR 1910.134), equivalent U.S. State standards, Canadian CSA Standard Z94.4-93, the European Standard EN149, or EU member states.

EYE PROTECTION: Safety glasses or goggles are required. If necessary, refer to U.S. OSHA 29 CFR 1910.133, Canadian Standards, and the European Standard EN166, Australian Standards, or relevant Japanese Standards.

HAND PROTECTION: Chemical resistant gloves are required to prevent skin contact. If necessary, refer to U.S. OSHA 29 CFR 1910.138, the European Standard DIN EN 374, the appropriate Standards of Canada, Australian Standards, or relevant Japanese Standards.

BODY PROTECTION: Use body protect appropriate to task being performed. If necessary, refer to appropriate Standards of Canada, or appropriate Standards of the EU, Australian Standards, or relevant Japanese Standards. If a hazard of injury to the feet exists due to falling objects, rolling objects, where objects may pierce the soles of the feet or where employee's feet may be exposed to electrical hazards, use foot protection, as described in U.S. OSHA 29 CFR 1910.136.

SECTION 9. PHYSICAL and CHEMICAL PROPERTIES**9.1 INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES:**

APPEARANCE (Physical State) and COLOR: This product is a colorless to yellow to brown liquid.

ODOR: Odorless

ODOR THRESHOLD: Not Available

pH: <1

MELTING/FREEZING POINT: Not Available

BOILING POINT: Not Available

FLASH POINT: Not Available

EVAPORATION RATE (n-BuAc=1): Not Applicable

FLAMMABILITY (SOLID, GAS): Not Applicable

UPPER/LOWER FLAMMABILITY OR EXPLOSION LIMITS: Not Available

VAPOR PRESSURE (mm Hg @ 20°C (68°F): < 1 mmHg @ 20°C(68°F)

VAPOR DENSITY: Not Available

RELATIVE DENSITY: 16.3-17.4 lbs/gal @ 25°C

SPECIFIC GRAVITY: 1.92 to 2.08 @ 25°C

SOLUBILITY IN WATER: Soluble

WEIGHT PER GALLON: Not Available

PARTITION COEFFICIENT (n-octanol/water): Not Available

AUTO-IGNITION TEMPERATURE: Not Available

DECOMPOSITION TEMPERATURE: 282°C(540°F)

VISCOSITY: Not Available

9.2 OTHER INFORMATION:

No additional information available at this time.

SECTION 10. STABILITY and REACTIVITY**10.1 REACTIVITY:**

No dangerous reaction known under conditions of normal use.

10.2 STABILITY:

Stable.

10.3 POSSIBILITY OF HAZARDOUS REACTIONS:

Hazardous reactions will not occur.

10.4 CONDITIONS TO AVOID:

Contact with incompatibles. Moisture. Excessive heat.

10.5 MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE:

Water, strong bases, and most metals. This material is corrosive to common metals such as mild steel, copper, brass and bronze and may generate hydrogen gas as a result of reaction. Reacts with water to generate heat and forms phosphoric acid. This reaction is not violent.

10.6 HAZARDOUS DECOMPOSITION PRODUCTS:

Oxides of phosphorus.

SECTION 11. TOXICOLOGICAL INFORMATION**11.1 INFORMATION ON TOXICOLOGICAL EFFECTS:**

TOXICITY DATA: No data available.

Polyphosphoric Acid CAS# 8017-16-1

Oral LD50 1,530 mg/kg Rat

Inhalation LC50 >850 mg/m³ Rat 1 hr

SUSPECTED CANCER AGENT: Ingredients within this product are not found on the following lists: FEDERAL OSHA Z LIST, NTP, IARC, or CAL/OSHA and therefore are not considered to be, nor suspected to be, cancer-causing agents by these agencies.

IRRITANCY OF PRODUCT: This product may be irritating to the skin, eyes and respiratory system.

SENSITIZATION TO THE PRODUCT: This product is not expected to cause skin sensitization.

REPRODUCTIVE TOXICITY INFORMATION: No specific information is available concerning the effects of this product and its components on the human reproductive system.

SPECIFIC TARGET ORGAN TOXICITY – SINGLE EXPOSURE: Eye and skin burns.

SPECIFIC TARGET ORGAN TOXICITY – REPEATED EXPOSURE: Bronchial irritation with chronic cough.

ASPIRATION HAZARD: None

SECTION 12. ECOLOGICAL INFORMATION**12.1 TOXICITY:**

No data available for Polyphosphoric Acid.

12.2 PERSISTENCE AND DEGRADABILITY:

No specific data available on this product.

12.3 BIOACCUMULATIVE POTENTIAL:

No specific data available on this product.

12.4 MOBILITY IN SOIL:

No specific data available on this product.

12.5 RESULTS OF PBT AND vPvB ASSESSMENT:

No specific data available on this product.

12.6 OTHER ADVERSE EFFECTS:

No known significant effects or critical hazards.

12.7 WATER ENDANGERMENT CLASS:

May be water endangering in accordance with EU Guideline 91/155-EWG. Do not allow product to reach ground water, water course or sewage system. At present there are no ecotoxicological assessments for this product.

SECTION 13. DISPOSAL CONSIDERATIONS**13.1 WASTE TREATMENT METHODS:**

Waste disposal must be in accordance with appropriate U.S. Federal, State, and local regulations, those of Canada, Australia, EU Member States and Japan.

13.2 EU WASTE CODE:

Not determined

SECTION 14. TRANSPORTATION INFORMATION

US DOT, IATA, IMO, ADR:

14.1 U.S. DEPARTMENT OF TRANSPORTATION (DOT) SHIPPING REGULATIONS: This product is classified (per 49 CFR 172.101) by the U.S. Department of Transportation, as follows.

UN IDENTIFICATION NUMBER: UN3264
PROPER SHIPPING NAME: Corrosive Liquid, acidic, inorganic, n.o.s (Polyphosphoric Acid)
HAZARD CLASS NUMBER and DESCRIPTION: Class 8 Corrosive Liquid
PACKING GROUP: III
DOT LABEL(S) REQUIRED: Corrosive Liquid
NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER: 154
RQ QUANTITY: 5000 LB (PHOSPHORIC ACID)
MARINE POLLUTANT: The components of this product are not designated by the Department of Transportation to be Marine Pollutants (49 CFR 172.101, Appendix B).

INTERNATIONAL AIR TRANSPORT ASSOCIATION SHIPPING INFORMATION (IATA): This product is considered as dangerous goods.**INTERNATIONAL MARITIME ORGANIZATION SHIPPING INFORMATION (IMO):** This product is considered as dangerous goods.**EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY ROAD (ADR):** This product is considered by the United Nations Economic Commission for Europe to be dangerous goods.**SECTION 15. REGULATORY INFORMATION****15.1 SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS SPECIFIC FOR THE SUBSTANCE OR MIXTURE:****UNITED STATES REGULATIONS:****U.S. SARA REPORTING REQUIREMENTS:** The components of this product are subject to the reporting requirements of Sections 302, 304, and 313 of Title III of the Superfund Amendments and Reauthorization Act.**U.S. SARA 311/312:** Acute Health**U.S. SARA THRESHOLD PLANNING QUANTITY:** There are no specific Threshold Planning Quantities for the components of this product. The default Federal SDS submission and inventory requirement filing threshold of 10,000 lbs (4,540 kg) therefore applies, per 40 CFR 370.20.**U.S. CERCLA REPORTABLE QUANTITY (RQ):** No data available.**U.S. TSCA INVENTORY STATUS:** The components of this product are listed on the TSCA Inventory or are exempted from listing.**OTHER U.S. FEDERAL REGULATIONS:** None known**CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65):** This product does not contain ingredients on the Proposition 65 Lists.**15.2 CANADIAN REGULATIONS:****CANADIAN DSL/NDL INVENTORY STATUS:** Components are DSL Listed, NDSL Listed and/or are exempt from listing**OTHER CANADIAN REGULATIONS:** Not applicable.**CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) PRIORITIES SUBSTANCES LISTS:**

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the SDS contains all of the information required by those regulations.

CANADIAN WHMIS CLASSIFICATION and SYMBOLS: This product is classified per 2015 WHMIS Controlled Product Regulations.**15.3 EUROPEAN ECONOMIC COMMUNITY INFORMATION:**

This product does meet the definition of a hazardous substance or preparation as defined by the European Union Council Directives 67/548/EEC, 1999/45/EC, 1272/2008/EC and subsequent Directives.

See Section 2 for Details

CHEMICAL SAFETY ASSESSMENT:

No Chemical Safety Assessment has been carried out for this substance/mixture by the supplier.

15.4 AUSTRALIAN INFORMATION FOR PRODUCT: Components of this product are not listed on the International Chemical Inventory list.**15.5 JAPANESE INFORMATION FOR PRODUCT:****JAPANESE MINISTER OF INTERNATIONAL TRADE AND INDUSTRY (MITI) STATUS:** The components of this product are not listed as Class I Specified Chemical Substances, Class II Specified Chemical Substances, or Designated Chemical Substances by the Japanese MITI.

15.6 INTERNATIONAL CHEMICAL INVENTORIES:

Listing of the components on individual country Chemical Inventories is as follows:

Asia-Pac: Not determined.

Australian Inventory of Chemical Substances (AICS): Not determined.

Korean Existing Chemicals List (ECL): Not determined.

Japanese Existing National Inventory of Chemical Substances (ENCS): Not determined.

Philippines Inventory of Chemicals and Chemical Substances (PICCS): Not determined.

Swiss Giftliste List of Toxic Substances: Not determined.

U.S. TSCA: Not determined.

SECTION 16. OTHER INFORMATION

PREPARED BY: Chris Eigbrett – (MSDS to GHS Compliance)

DATE OF PRINTING: March 21, 2018

The information contained herein is believed to be accurate but is not warranted to be so. Data and calculations are based on information furnished by the manufacturer of the product and manufacturers of the components of the product. Users are advised to confirm in advance of the need that information is current, applicable and suited to the circumstances of use. Innophos assumes no responsibility for injury to vendee or third party person proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Furthermore, Innophos assumes no responsibility for injury caused by abnormal use of this material even if reasonable safety procedures are followed.

END OF SDS SHEET

SILVER FERN CHEMICAL



Safety Data Sheet

Oleyl Amine Distilled

SECTION 1: IDENTIFICATION

Product Name: Oleyl Amine Distilled

CAS Number: 112-90-3

Chemical Name: 1-Amino-9-octadecene

Synonyms: 1-Amino-9-octadecene, Oleylamine

Uses: In the preparation of Ethoxylated products, Acid thickner, Cationic surfactants, Flushing & Dispersion of pigments (yellow pigment).

Company

Silver Fern Chemical, Inc.
2226 Queen Anne Avenue North
Suite #C
Seattle WA 98109, USA

Business Contact

Customer Service: 1-866-282-3384
info@silverfernchemical.com

24 Hour Emergency Contact

Infotrac 800-535-5053
Outside USA & Canada 352-323-3500

SECTION 2: HAZARD IDENTIFICATION

Danger



H314 Causes severe skin burns and eye damage.

H410 Very toxic to aquatic life with long lasting effects.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

CAS #	Content (W/W)	Ingredients
112-90-3	98%	1-Amino-9-octadecene

SECTION 4: FIRST AID MEASURES

If inhaled: Remove from exposure and move to fresh air immediately. If breathing is difficult, give oxygen. Do NOT use mouth-to-mouth resuscitation. If breathing has ceased apply artificial respiration using oxygen and a suitable mechanical device such as a bag and a mask.

In case of skin contact: Flush skin with plenty of water for at least 15 minutes. Discard contaminated clothing in a manner, which limits further exposure.

In case of eye contact: Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid immediately. Do NOT allow victim to rub.

If swallowed: Do NOT induce vomiting. If conscious and alert, rinse mouth and drink 2-4 cups full of milk or water.

SECTION 5: FIRE FIGHTING MEASURES

General Information - As in any fire, wear a self-contained breathing apparatus in pressure demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition.

Extinguishing Media - Use water spray, dry chemical, carbon dioxide, or appropriate foam.

NFPA Rating - (estimated) Health: 3; Flammability: 0; Instability: 0

SECTION 6: ACCIDENTAL RELEASE MEASURES

General Information - Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks - Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Provide ventilation.

SECTION 7: HANDLING AND STORAGE

Handling - Wash thoroughly after handling. Keep container tightly closed. Use with adequate ventilation. Discard contaminated shoes.

Storage - Keep container closed when not in use. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Corrosives area.

SECTION 8: EXPOSURE CONTROLS AND PERSONAL PROTECTION

Engineering Controls

Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

Exposure Limits: None listed.

Personal Protective Equipment

Eyes - Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin - Wear appropriate protective gloves and clothing to prevent skin exposure.

Clothing - Wear appropriate protective clothing to minimize contact with skin.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Liquid
Color	Colorless to pale yellow
Odor	Not available.
pH	Alkaline
Vapor Pressure	1 mmHg @ 120 C
Viscosity	Not available.
Boiling Point	348 °C - 350 °C
Freezing/Melting Point	25 °C Max
Auto-ignition Temperature	Not available.
Flash Point	>120 deg C
Explosion Limits, lower	Not available.
Explosion Limits, upper	Not available.
Decomposition Temperature	Not available.
Solubility	Soluble in alcohols and chloroform
Specific Gravity/Density	0.84
Molecular Formula	R-NH ₂
Molecular Weight	267-280

SECTION 10: STABILITY AND REACTIVITY

Chemical Stability - Stable under normal temperatures and pressures.

Conditions to Avoid - Incompatible materials.

Incompatibilities with Other Materials - Strong oxidizing agents.

Hazardous Decomposition Products - Nitrogen oxides, carbon monoxide, carbon dioxide, nitrogen.

Hazardous Polymerization - Has not been reported.

SECTION 11: TOXICOLOGICAL INFORMATION

RTECS# CAS# 112-90-3: RG4130000

LD50/LC50 Not available.

Carcinogenicity Oleylamine - Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.

SECTION 12: ECOLOGICAL INFORMATION

Persistence and degradability
no data available

Bioaccumulative potential
no data available

Mobility in soil
no data available

Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

Other adverse effects
An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Very toxic to aquatic life.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste treatment methods

Product

Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated packaging

Dispose of as unused product.

SECTION 14: TRANSPORT INFORMATION

DOT (US)

UN number: 2735 Class: 8 Packing group: II
Proper shipping name: Amines, liquid, corrosive, n.o.s. ((Z)-Octadec-9-enylamine)
Reportable Quantity (RQ):
Marine pollutant: No
Poison Inhalation Hazard: No

IMDG

UN number: 2735 Class: 8 Packing group: II EMS-No: F-A, S-B
Proper shipping name: AMINES, LIQUID, CORROSIVE, N.O.S. ((Z)-Octadec-9-enylamine)
Marine pollutant: No

IATA

UN number: 2735 Class: 8 Packing group: II
Proper shipping name: Amines, liquid, corrosive, n.o.s. ((Z)-Octadec-9-enylamine)

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

SECTION 15: REGULATORY INFORMATION

US FEDERAL

TSCA: CAS# 112-90-3 is listed on the TSCA inventory.

Health & Safety Reporting List: Effective Date: 1/13/84; Sunset Date: 1/13/94

Chemical Test Rules: None of the chemicals in this product are under a Chemical Test Rule.

Section 12b: None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule: None of the chemicals in this material have a SNUR under TSCA.

SARA

CERCLA Hazardous Substances and corresponding RQs

None of the chemicals in this material have an RQ.

SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

Section 313: No chemicals are reportable under Section 313.

Clean Air Act: This material does not contain any hazardous air pollutants. This material does not contain any Class 1 Ozone depletors. This material does not contain any Class 2 Ozone depletors.

Clean Water Act: None of the chemicals in this product are listed as Hazardous Substances under the CWA. None of the chemicals in this product are listed as Priority Pollutants under the CWA. None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA: None of the chemicals in this product are considered highly hazardous by OSHA.

STATE: CAS# 112-90-3 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols: C

Risk Phrases: R 34 Causes burns.

Safety Phrases: S 24/25 Avoid contact with skin and eyes. S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S 37 Wear suitable gloves. S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). S 28A After contact with skin, wash immediately with plenty of water.

WGK (Water Danger/Protection): CAS# 112-90-3: 2

Canada - DSL/NDSL: CAS# 112-90-3 is listed on Canada's DSL List.

Canada - WHMIS: This product has a WHMIS classification of E.

SECTION 16: OTHER INFORMATION

Aquatic Acute	Acute aquatic toxicity
Aquatic Chronic	Chronic aquatic toxicity
Eye Dam.	Serious eye damage
H314	Causes severe skin burns and eye damage.
H318	Causes serious eye damage.
H400	Very toxic to aquatic life.

HMIS Rating

Health hazard: 3

Chronic Health Hazard:

Flammability: 1

Physical Hazard 0

NFPA Rating

Health hazard: 3

Fire Hazard: 1

Reactivity Hazard: 0

DISCLAIMER OF RESPONSIBILITY

The information on this MSDS was obtained from sources which we believe are reliable. However, the information is provided without any warranty, expressed or implied, regarding its correctness. Some information presented and conclusions drawn herein are from sources other than direct test data on the substance itself. The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage, or expense arising out of or in any way connected with handling, storage, use, or disposal of this product. If the product is used as a component in another product, this MSDS information may not be applicable.

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